

SEP 4 1923

PROCEEDINGS

OF THE

AMERICAN SOCIETY

OF

CIVIL ENGINEERS

VOL. XLIX—No. 7



September, 1923

Published by the American Society of Civil Engineers at its Headquarters,
33 West Thirty-ninth Street, New York, January-May, August-December,
Printed in the United States.

Copyrighted 1923, by the American Society of Civil Engineers.
Entered as Second-Class Matter, December 14, 1896, at the Post Office
at New York, N. Y., under the Act of March 3, 1879.
Acceptance for mailing at special rate of postage provided for in Section 1103,
Act of October 3, 1917, authorized on July 5, 1918.
Subscription, \$8 per annum.

SUMMARY OF CONTENTS

This publication is divided into three parts, Society Affairs, Preliminary Notices of Application for Admission and for Transfer, and Reports, Papers, Discussions and Memoirs. These have separate pagings.

For complete Table of Contents see:

| | |
|--|----------|
| Society Affairs..... | Page 469 |
| Preliminary Notices of Applications..... | " 245 |
| Reports, Papers, Discussions, and Memoirs..... | " 1361 |

PAPERS IN THIS NUMBER

Address at the Annual Convention, in Chicago, Illinois, July 11, 1923. CHARLES F. LOWETH.

Tentative Specifications for Steel Highway Bridge Superstructure: Submitted as a Progress Report by the Special Committee on Specifications for Bridge Design and Construction. (To be Presented November 7, 1923.)

Railroad Transportation and Railroad Terminals: A Symposium.

CURRENT PAPERS AND DISCUSSIONS

| | | | |
|---|--------------|-------------------|-------------|
| Progress Report of the Special Committee on Impact in Highway Bridges..... | Mar., 1923 | Discussion closes | Uncertain |
| Progress Report of the Special Committee on Electrification of Steam Railways..... | Mar., | " | Uncertain |
| "Theoretical Frequency Curves and Their Application." H. ALDEN FOSTER..... | May, | " | " |
| Discussion..... | Aug., Sept., | " | Sept., 1923 |
| "The Design of Earth Dams." JOEL D. JUSTIN..... | May, | " | " |
| Discussion..... | Aug., Sept., | " | Sept., 1923 |
| "Proposed Loading for Highway Bridges." HAROLD D. HUSSEY. (To be presented September 5, 1923.)..... | Aug., | " | Nov., 1923 |
| "The Disintegration of Cement in Sea Water." WILLIAM G. ATWOOD and A. A. JOHNSON..... | Aug., | " | " |
| Discussion..... | Sept., | " | Nov., 1923 |
| "Improved Type of Multiple-Arch Dams." FRED A. NOETZLI..... | Aug., | " | Nov., 1923 |
| "Stresses in Multiple-Arch Dams." B. F. JAKOBSEN..... | Aug., | " | Nov., 1923 |
| The River and Harbor Problems of the Lower Mississippi: A Symposium..... | Aug., | " | " |
| Discussion..... | Aug., Sept., | " | Uncertain |
| Tentative Specifications for Steel Highway Bridge Superstructure: Submitted as a Progress Report by the Special Committee on Specifications for Bridge Design and Construction. (To be Presented November 7, 1923)..... | Sept., | " | " |
| Discussion..... | Sept., | " | Uncertain |

PROCEEDINGS

OF THE

AMERICAN SOCIETY

OF

CIVIL ENGINEERS

(INSTITUTED 1852)

VOL. XLIX—No. 7.

SEPTEMBER, 1923

Edited by the Secretary, under the direction of the Committee on
Technical Activities and Publications.

Reprints from this publication, which is copyrighted, may be made on condition that the full
title of Paper, name of Author, page reference, and date of
presentation to the Society, are given.

This Society is not responsible for any statement made or opinion expressed
in its publications.

NEW YORK 1923

Entered according to Act of Congress, in the year 1923, by the AMERICAN SOCIETY OF CIVIL
ENGINEERS, in the office of the Librarian of Congress, at Washington.

American Society of Civil Engineers

OFFICERS FOR 1923

President, CHARLES F. LOWETH

Vice-Presidents

Term expires January, 1924:

C. E. GRUNSKY
ROBERT RIDGWAY

Term expires January, 1925:

GEORGE S. DAVISON
ANSON MARSTON

Secretary, JOHN H. DUNLAP

Assistant Secretary, C. E. BEAM

Treasurer, OTIS E. HOVEY

Directors

Term expires January, 1924:

RICHARD L. HUMPHREY
BAXTER L. BROWN
JOHN F. HOGAN
IRA W. MCCONNELL
GEORGE G. ANDERSON
FRANK T. DARROW

Term expires January, 1925:

JOHN N. CHESTER
ARTHUR J. DYER
FRANK E. WINSOR
WALTER L. HUBER
JOSEPH J. YATES
CLIFFORD M. HOLLAND

Term expires January, 1926:

GEORGE C. MASON
THEODORE L. CONDRON
GEORGE H. FENKELL
GLENN D. HOLMES
EZRA B. WHITMAN
RALPH N. BEGLEN

Past-Presidents, Members of the Board:

ARTHUR N. TALBOT

F. S. CURTIS
ARTHUR P. DAVIS

GEORGE S. WEBSTER
JOHN R. FREEMAN

Secretary Emeritus, CHARLES WARREN HUNT

Standing Committees

(THE PRESIDENT OF THE SOCIETY IS *ex officio* MEMBER OF ALL COMMITTEES)

EXECUTIVE COMMITTEE: Charles F. Loweth, Robert Ridgway, Clifford M. Holland, George S. Webster, Frank E. Winsor.

ON TECHNICAL ACTIVITIES AND PUBLICATIONS: Richard L. Humphrey, John N. Chester, C. E. Grunsky, John P. Hogan, J. J. Yates.

ON PUBLIC RELATIONS: Baxter L. Brown, M. G. Barnes, A. H. Markwart, Leonard Metcalf, George R. Putnam.

ON RESEARCH: A. N. Talbot, Robert A. Cummings, W. C. Cushing, A. T. Goldbeck, D. C. Henny, R. E. Horton, Anson Marston, F. E. Schmitt, F. E. Turneaure.

ON HONORARY MEMBERSHIP: A. N. Talbot, F. S. Curtis, Arthur P. Davis, George S. Davison, John R. Freeman, C. E. Grunsky, Charles F. Loweth, Anson Marston, Robert Ridgway, George S. Webster.

ON LOCAL SECTIONS: Richard L. Humphrey, George G. Anderson, George H. Fenkell.

ON PROFESSIONAL CONDUCT: John R. Freeman, George S. Davison, I. W. McConnell.

ON STUDENT CHAPTERS: Anson Marston, Arthur J. Dyer, E. B. Whitman.

Special Committees

TO CODIFY PRESENT PRACTICE ON THE BEARING VALUE OF SOILS FOR FOUNDATIONS, ETC.: Robert A. Cummings, Walter J. Douglas, E. G. Haines, Allen Hazen, James C. Meem, George Paaswell.

ON STRESSES IN RAILROAD TRACK: A. N. Talbot, G. H. Bremner, John Brunner, W. J. Burton, Charles S. Churchill, W. C. Cushing, W. M. Dawley, H. E. Hale, J. B. Jenkins, George W. Kittredge, Paul M. LaBach, C. G. E. Larsson, G. J. Ray, Albert F. Reichmann, H. R. Safford, Earl Stimson, F. E. Turneaure, J. E. Willoughby.

ON HIGHWAY ENGINEERING: H. Eltinge Breed, George W. Tillson, A. B. Fletcher, John M. Goodell.

ON BRIDGE DESIGN AND CONSTRUCTION: Henry B. Seaman, J. H. Ames, Victor H. Cochrane, J. E. Greiner, C. R. Harding, Otis E. Hovey, C. W. Hudson, E. F. Kelley, M. S. Ketchum, S. B. Slack, I. F. Stern.

ON STANDARD CONSTRUCTION CONTRACTS: J. S. Langthorn, H. Eltinge Breed, J. H. Brillhart, Edward H. Lee, Hunter McDonald, George H. Pegram, Henry H. Quimby.

ON CONCRETE AND REINFORCED CONCRETE ARCHES: C. T. Morris, G. E. Beggs, J. R. Chamberlin, E. H. Harder, A. C. Janni, W. M. Wilson.

ON ELECTRIFICATION OF STEAM RAILWAYS: Charles F. Loweth, Bion J. Arnold, George Gibbs, George W. Kittredge, E. J. Pearson, Samuel Rea, Robert Ridgway.

ON STRESSES IN STRUCTURAL STEEL: F. O. Dufour, Clement E. Chase, O. F. Dalstrom, J. H. Edwards, R. J. Fogg, F. M. Masters, L. D. Rights, F. E. Schmitt, W. J. Thomas.

ON IMPACT IN HIGHWAY BRIDGES: A. H. Fuller, A. R. Eltzen, E. F. Kelley, F. E. Turneaure.

ON FLOOD-PROTECTION DATA: N. C. Grover, C. B. Burdick, W. P. Creager, H. P. Eddy, Gerard H. Matthes, Charles H. Paul, A. O. Ridgway.

ON IRRIGATION HYDRAULICS: D. C. Henny, W. F. Allison, B. A. Etcheverry, Samuel Fortier, R. L. Parshall, J. L. Savage, F. C. Scobey, Stuart Sims, J. C. Stevens, Franklin Thomas.

ON HYDRAULICS PHENOMENA: S. M. Woodward, M. L. Enger, R. E. Horton, A. T. Safford, E. W. Schoder.

ON FIRE PREVENTION OF DOCKS, PIERS, AND WHARVES: Benjamin Thompson, J. F. Coleman, Rudolph P. Miller, W. Watters Pagon, John Stephen Sewell.

ALFRED NOBLE MEMORIAL COMMITTEE: Samuel Rea, Bion J. Arnold, Onward Bates, J. Vipond Davies, George Gibbs, William W. Harts, S. H. Hedges, J. W. Lieb, F. H. Newell, Robert Ridgway, J. Waldo Smith.

SOCIETY AFFAIRS

CONTENTS

| | PAGE |
|--|------|
| Items of Interest..... | 469 |
| Activities of Local Sections..... | 481 |
| Minutes of Meetings: | |
| Report in Full of the Business Meeting and Technical Sessions, at the Fifty-third Annual Convention, July 11-12, 1923..... | 483 |
| Board of Direction, July 9-10, 1923..... | 492 |
| Highway Engineering Division, July 11, 1923..... | 520 |
| Power Division, July 11, 1923..... | 520 |
| Sanitary Engineering Division, July 11, 1923..... | 522 |
| City Planning Division, July 12, 1923..... | 524 |
| Excursions and Entertainments at Fifty-third Annual Convention..... | 524 |
| Announcements: | |
| Hours during which the Reading Room is open..... | 526 |
| Future Meetings..... | 526 |
| Richmond, Va., Meeting..... | 526 |
| Searches in the Library..... | 527 |
| New Local Sections of the American Society of Civil Engineers..... | 527 |
| New Student Chapters of the American Society of Civil Engineers..... | 527 |
| Membership (Additions, Resignations, Deaths)..... | 528 |
| Employment Bulletin..... | 532 |
| Additions to Engineering Societies' Library..... | 535 |
| Current Engineering Literature..... | 546 |

Items of Interest*

**The President's Address at the Annual Convention
in Chicago, Ill., July 11, 1923**

President Loweth, in his Annual Address† at the Convention of the Society in Chicago, described the development of Engineering Societies and the history and growth of this Society. The attention of members is directed particularly to his statements in regard to Local Sections, Technical Divisions, and Co-operation.

President Loweth points out that there has been a great deal of co-operation in technical fields and states that in those matters pertaining to the general welfare of the Profession there is room for more co-operation on the part of the engineering organizations. The chief function of such co-operation, he declares, is to bring about concerted action of engineering organizations rather than to attempt to speak for them, and it should function so as to leave room for expression of minority opinion or qualified approval where unanimity could not be obtained except as a result of compromise. He questions whether

* Members are urged to contribute items of general interest.

† See 'Papers and Discussions,' p. 1363.

it would have been possible for this Society to have become the one all-inclusive engineering society in the United States or whether it would have been desirable. He states that the Local Sections and Technical Divisions will tend to check the formation of new societies by making it possible for a small number of engineers interested in a particular field of engineering to function more easily.

Second Ballot for Official Nominees

The report of the Tellers on the Second Ballot for Official Nominees, which was canvassed on August 15, 1923, is as follows:

"AUGUST 15, 1923

"MR. JOHN H. DUNLAP

Secretary, THE AMERICAN SOCIETY OF CIVIL ENGINEERS.

"DEAR SIR:

"The Tellers appointed to canvass the Second Ballot for Official Nominees report as follows:

"Total number of ballots received..... 3 395

"Deduct:

Ballots from members in arrears of dues..... 158

" " Affiliate 1

" " unsigned 30

"Total members not entitled to vote..... 189 189

"Signatures not legible..... 3 206

"Ballots canvassed..... 3 203

"For President:

CARL E. GRUNSKY.....1 671

FRANCIS LEE STUART.....1 509

Void 11

Blank 12

Total3 203

"For Directors, District No. 1:

PAUL G. BROWN..... 455

THADDEUS MERRIMAN 513

Void 4

Blank 34

Total votes cast..... 551

"For Vice-President, Zone 1:

LINCOLN BUSH 845

Void 6

Blank 37

Total 888

"For Director, District No. 4:

G. H. BLAKELEY..... 20

ROBERT FARNHAM 98

JOHN MEIGS 89

Void 1

Blank 2

Total 210

"For Vice-President, Zone 4:

GEORGE G. ANDERSON..... 399

OSCAR S. BOWEN..... 520

Void 3

Blank 9

Total 931

"For Director, District No. 11:

ARTHUR O. RIDGWAY..... 231

Blank 18

Total 249

"For Director, District No. 14:

| | |
|-----------------------------|-----|
| E. A. HADLEY..... | 43 |
| ALEXANDER MAITLAND, JR..... | 124 |
| G. F. MAITLAND..... | 11 |
| Void | 1 |
| Blank | 2 |

Total 181

"For Director, District No. 15:

| | |
|----------------------|-----|
| J. M. HOWE..... | 140 |
| J. H. BRILLHART..... | 60 |
| Void | 2 |
| Total | 202 |

"Respectfully submitted,

"W. F. REEVES, *Chairman,*

"OTTO G. BUETTNER,
ERNEST B. DAY,
H. P. HAMMOND,
C. H. CROOKS,
HORATIO P. VAN CLEVE,
ENOCH R. NEEDLES,
E. G. HAINES,
BILLINGS WILSON,
JOSEPH A. CONNELLY,

"WALTER E. SPEAR,
HARRY D. WINSOR,
WILLIAM W. BRUSH,
HAROLD M. LEWIS,
HERBERT C. KEITH,
FRANCIS H. WRIGHT,
BIRD L. REES,
WILLIAM J. BOUCHER,
ALGER C. GILDERSLEEVE,
WILLIAM C. MERRYMAN,

"Tellers"

New Co-operative Employment Service

The attention of members is directed to a new plan of operating the Employment Service of the Founder Societies, that will become effective on September 1, 1923.

A Joint Committee of the Founder Societies studied the situation and presented a report* on which has been based a co-operative plan† that has been approved by the governing bodies of those Societies. At the meeting of the Board of Direction on July 10, 1923, the Secretary was authorized to put into operation, in conjunction with the Secretaries of the other Founder Societies, the plan just mentioned.

In accordance with those instructions, the Employment Service will be operated on the following basis:

(a).—The Founder Societies will appropriate next year one-half the amount of last year, for the support of the Employment Service. The Service will be conducted under the supervision of the Secretaries of the Founder Societies.

(b).—Notices of "Men Available" will be continued in the Society publications without charge to members.

(c).—To members who obtain positions through the Employment Service, a charge will be made after September 1, 1923, on the following basis: \$10 for all positions paying a salary of \$2 000 per year or less; \$10 + 1% of all salary in excess of \$2 000; for temporary positions: One month or less, 3% of amount received and no refund of the Bulletin subscription.

(d).—Registration with the Service will be restricted to members of the four Founder Societies for the present.

* *Proceedings*, Am. Soc. C. E., August, 1923, p. 385.

† See p. 500.

(e).—The publication of "Positions Available" will be discontinued and instead, a weekly Employment Service Bulletin will be sent to those regularly registered as available, at the following subscription rates: Three months, \$3; one year, \$10.

(f).—Any surplus at the end of the first year from the income from fees and the amount appropriated by the Founder Societies will be used for extending the Service to other cities, this plan to be continued from year to year.

(g).—The four Founder Societies will underwrite the Service for one year, on the basis of the cost of maintaining the present Service for the past year, apportioned according to the number of members of each Society who obtained positions during the last year, and will appropriate 50% of the amount underwritten.

The funds available in the past from the treasuries of the four Founder Societies have not been sufficient to establish and conduct an adequate Service of National scope. It is hoped that the maintenance charge which will be made to all those who obtain positions through the efforts of the Employment Service, on the basis just mentioned, will eventually provide funds for developing a personnel adequate to render satisfactory service, with proper investigation of all positions available, and careful individual attention to all applicants for positions.

It is planned that eventually the staff will include competent investigators who will visit employers and obtain complete data in regard to positions as soon as information of the vacancies is received. The Service would then be in a position to select intelligently the proper candidates. These investigators will also be used to inquire into the qualifications of those who register for positions, in order to guide the judgment of the Employment Management in selecting the right man for the job.

As rapidly as permitted by the funds available from the partial support of the Founder Societies, from the maintenance charges, and from the subscriptions to the Employment Bulletin, the new Co-operative Service will be extended to the principal engineering centers, with the aim of providing a service that is National in scope, that will accommodate itself to local needs, and that will provide the necessary National clearing house, for positions and men available.

Committee Appointed to Investigate the Dismissal of Past-President Davis as Director of the U. S. Reclamation Service

The resolutions adopted by the Board of Direction on July 10, 1923, and approved unanimously by the Society in Convention assembled July 11, 1923, may be found on page 338 of the August, 1923, *Proceedings*.

President Loweth has appointed a Committee, composed of John F. Stevens, Hon. M. Am. Soc. C. E., and George S. Webster, Past-President, Am. Soc. C. E., to investigate the facts and report to the Board. The other National Engineering Societies and the Federated American Engineering Societies are co-operating in the investigation. Members are urged to communicate their views to the Secretary.

Meetings of Technical Divisions

A new Technical Division of the Society, the City Planning Division, was authorized by the Board of Direction at its meeting in Chicago, Ill., July 9, 1923.

An organization meeting of the Division was held on July 12, 1923, at which the following Temporary Executive Committee was appointed to serve until their successors are elected: Messrs. Nelson P. Lewis, Chairman, Charles B. Ball, Secretary-Treasurer, Harland Bartholomew, E. A. Fisher, and C. E. Grunsky.

The minutes of this meeting are published on page 524 of this number of *Proceedings*.

Minutes of the meetings of the Power Division, Sanitary Engineering Division, and the Highway Engineering Division, held during the Annual Convention in Chicago, Ill., will also be found in this number of *Proceedings*, beginning page 520.

Local Sections Asked to Study Waste in Industry

The attention of Local Section members is directed to the minutes of the meeting of the Board of Direction* of July 9, 1923, at which it was decided to ask that Local Sections of the Society discuss "Waste in the Building Industry", using as a basis for this discussion the "Report of the Associated General Contractors of America on the Seasonal Demand of Construction for Labor, Materials and Transportation", with the emphatic statement to each Section that in making the suggestion it should be understood that the Society is not committed either for or against any of the recommendations contained in the report; and that the Sections report their views on this matter, together with the desirability of the formation of a Construction Division in the Society, to the Committee on Technical Activities and Publications. Copies of the report just mentioned are to be forwarded to each Local Section.

Proposed Amendment to By-Laws Affecting Student Members of the Society

An amendment† to the By-Laws of the Society was proposed at the July 9, 1923, meeting of the Board of Direction, as follows: Amend Article V, Section 7, by adding, "(h) Graduates recommended by the heads of the Civil Engineering Departments of their respective Engineering Colleges, may upon payment of \$4.50 continue affiliation with their Student Chapters until the January 1, second following graduation. During this period they shall receive the *Proceedings* and shall have the privilege of membership in any Local Section in the territory of which they may locate."

* See p. 504.

† See p. 510.

Tentative Specifications for Steel Highway Bridges

The attention of members is called to the Tentative Specifications for Steel Highway Bridges on page 1377 of Papers and Discussions of this number of *Proceedings*. These specifications, which are submitted as a Progress Report of the Special Committee on Specifications for Bridge Design and Construction, will be presented for discussion at the regular meeting of the Society, to be held at the Engineering Societies Building, on November 7, 1923. Written discussion of this report will be welcomed from members who will be unable to attend the meeting.

Herrin, Ill., Massacre

The attention of members is called to the resolutions (page 517), adopted by the Board of Direction at its meeting in Chicago, Ill., on July 10, 1923, in regard to the murder of John Earl Shoemaker, Assoc. M. Am. Soc. C. E., at Herrin, Ill., on June 22, 1922.

Copies of these resolutions were ordered to be sent to the Governor and the Attorney General of Illinois, and to the friends of the deceased.

Meeting of the Joint Committee on Co-Operation

The large attendance at the first meeting of the Joint Committee on Co-operation, held at the Engineering Societies Building on July 24, 1923, indicates the interest the Founder Societies are taking in the invitation of this Society to confer with it in an effort to formulate some method of joint co-operation on public matters. The Committee has the following membership: For the American Society of Civil Engineers, Messrs. Charles F. Loweth, Chairman, Willard T. Chevalier, Charles H. Paul, A. H. Markwart, and Leonard Metcalf; for the American Institute of Mining and Metallurgical Engineers, Messrs. E. P. Mathewson, Galen H. Clevenger, Arthur S. Dwight, J. V. W. Reynders, and J. Parke Channing; for the American Society of Mechanical Engineers, Messrs. J. L. Harrington, L. P. Alford, D. S. Kimball, Mortimer E. Cooley, and Fred J. Miller; for the American Institute of Electrical Engineers, Messrs. F. B. Jewett, William McClellan, L. B. Stillwell, Calvert Townley, and L. F. Morehouse.

Of these, all but four were present at both the morning and the afternoon sessions. After a thorough discussion of the whole problem, participated in by all present, a sub-committee was authorized, consisting of the Presidents and Secretaries of the four Founder Societies, to consider the field and the means of co-operation, and to report back at a future meeting to be called by President Loweth.

American Peace Award

The Society has been invited to co-operate in the American Peace Award and to publish information on the plan. In a circular issued by the Policy Committee, the conditions are stated in part, as follows:

"The conditions of the Award will provide that organizations as well as individuals shall be eligible to submit a plan and win the Award.

"The Policy Committee urges every interested organization to submit a plan.

"Only one plan may be submitted by any one organization; but the submission of a plan by an organization will not preclude any officer or member of the organization from submitting a plan as an individual, provided of course that it shall not be the same plan that is submitted by the organization."

The circular further states that:

"The object of the Award is not only to secure a plan, upon which people and groups of many varieties of opinion will agree, but also to have this plan pass the Senate.

"It is our hope and expectation that the winning plan will be a plan acceptable to organizations in any kind of co-operation on the part of the United States to prevent war, and that these organizations, when the plan is chosen, will work together to conduct an active nation-wide campaign to secure approval of the plan by the Senate."

Correspondence should be addressed to Miss Esther Everett Lape, Member in Charge, Policy Committee, American Peace Award, 342 Madison Avenue, New York, N. Y.

National Research Council and Its Division of Engineering

In order that members of the Society may become more familiar with the work of the National Research Council and its Division of Engineering, the following account of the work of the Council is presented.

National Research Council was organized during the World War to co-ordinate the research facilities of the country in solving war problems. The Division of Engineering, one of the thirteen divisions affiliated with the Council, has its headquarters in the Engineering Societies Building and is co-operating with the Engineering Societies in their research activities. The Division at present has about twenty projects under way. In order that members may become familiar with the activities of the Council, particularly with those of the Division of Engineering, the following résumé of the work accomplished or in progress is presented.

USEFUL INFORMATION SERVICE

One of the activities of the Research Information Service of the National Research Council in Washington, D. C., is the compilation and issuance of significant facts about scientific research and its industrial relations. Informational reports thus prepared ordinarily are available either at cost or free.

Several lists of scientific and technological bibliographies also have been issued.

RESEARCH COMMITTEES OF THE DIVISION OF ENGINEERING

The following is a list of committees of the Division, followed by a résumé of the progress to date:

| Committee: | Chairman: |
|---|---|
| Advisory Board on Highway Research (W. K. Hatt, M. Am. Soc. C. E., Director)..... | A. N. Johnson, M. Am. Soc. C. E. |
| With Committees on: | |
| Character and Use of Road Materials.... | H. S. Mattimore, Assoc. M. Am. Soc. C. E. |
| Economic Theory of Highway Improvement | T. R. Agg, M. Am. Soc. C. E. |
| Tractive Resistance of Roads..... | C. J. Tilden, M. Am. Soc. C. E. |
| Structural Design of Roads..... | A. T. Goldbeck, Assoc. M. Am. Soc. C. E. |
| Highway Traffic Analysis | G. E. Hamlin |
| Highway Finances..... | J. D. McKay |
| American Bureau of Welding (C. A. Adams, Director; Wm. Spraragen, Secretary): | |
| With Committees on: | |
| Electric Arc Welding..... | H. M. Hobart |
| Gas Welding..... | S. W. Miller |
| Welding of Storage Tanks..... | J. C. Lincoln |
| Pressure Vessels..... | H. L. Whittemore |
| Welding Wire Specifications..... | C. A. McCune |
| Training of Welding Operators..... | J. C. Wright, M. Am. Soc. C. E. |
| Standard Tests for Welds..... | F. M. Farmer |
| Specifications for Steel to be Welded.... | W. J. Beck |
| Resistance Welding..... | H. Lemp |
| Thermit Welding..... | J. H. Deppeler |
| Welded Rail Joints..... | G. K. Burgess |
| Electrical Core Losses..... | A. E. Kennelly |
| De-oxidizers | G. K. Burgess |
| Electrical Insulation..... | John B. Whitehead |
| Fatigue Phenomena of Metals..... | H. F. Moore |
| Hardness Testing of Metals..... | A. E. Bellis |
| Heat Treatment of Carbon Steel..... | F. B. Foley |
| Marine Piling Investigations (W. G. Atwood, M. Am. Soc. C. E., Director)..... | R. T. Betts, M. Am. Soc. C. E. |
| Moulding Sands..... | R. A. Bull |
| Neumann Bands..... | C. E. Munroe |
| Physical Changes in Iron and Steel below the Thermal Critical Range..... | Zay Jeffries |
| Pulverizing | G. H. Clevenger |
| Uses of Tellurium and Selenium..... | V. Lenher |
| Heat Transmission (Organizing Committee).. | H. C. Dickinson |

RÉSUMÉ OF WORK ACCOMPLISHED

Fatigue Phenomena of Metals.—The object of this research is to extend the knowledge of the nature of fatigue phenomena of metals and to determine general laws for the guidance of engineers and manufacturers in selecting materials, making designs, and choosing methods of manufacture and operation.

The present activities are: (1) Investigation of fatigue of wrought ferrous metals under cycles of stress repeated but not reversed; (2) study of the effect of heat treatment on fatigue strength of steel; and (3) obtaining

further evidence for the guidance of a definite endurance limit for wrought ferrous metals, new apparatus and methods being developed.

A second progress report has been published as *Bulletin No. 136* of the Engineering Experiment Station of the University of Illinois. For continuing investigations in the field of non-ferrous metals, \$30 000 has been obtained. Important conclusions as to the fatigue properties of wrought ferrous metals has already been obtained.

Engineering Foundation made possible the investigation through an original grant of \$30 000 and is acting as Treasurer for the funds received. The University of Illinois, General Electric Company, Western Electric Company, Copper and Brass Research Association, and the Allis-Chalmers Manufacturing Company are co-operating.

American Bureau of Welding.—The Annual Report of the American Bureau of Welding shows that fifteen reports have already been prepared and published.

Marine Piling Investigations.—The object of this study is to learn more about the marine boring animals; to devise methods for protection against their ravages; and to study the cause of deterioration of cement concrete in and near sea water and methods of prevention.

A study is being made of the habits, breeding seasons, and life of the worms, and chemical investigations to note toxic effect of different poisons to be placed in water near the piles are being made. The effect of impregnation of poisonous salts and strips of metal on piles is also being investigated. A survey is also being made of the literature dealing with deterioration of concrete in and near sea water.

A 60-page progress report of the investigations on wooden structures, has been published by the American Railway Engineering Association as *Bulletin No. 255*. A paper by William G. Atwood and A. A. Johnson, Members, Am. Soc. C. E., on "Disintegration of Cement in Sea Water",* presented at the meeting of the Society on June 13, 1923, includes a review of literature on the disintegration of cement, describes foreign experiments, and recommends other experiments with cement in sulphate-bearing waters.

Pressure Vessels.—The object of the research is to assist the Boiler Code Committee of the American Society of Mechanical Engineers in preparing a satisfactory code governing the use of welding in the construction of unfired pressure vessels.

A 150-page report has been published by the American Welding Society that includes test data obtained from the destructive tests of about fifty tanks and the analysis of the test results.

Moulding Sands.—This study was started in order to effect economies in iron and steel and non-ferrous foundries through the re-use of foundry and core sands; to investigate the methods of testing moulding sands; to effect uniformity of practice in testing by establishing standard test methods; and to devise methods for scientific selection of sands for special purposes, and for conditioning sands not otherwise usable.

* *Proceedings*, Am. Soc. C. E., August, 1923, Papers and Discussions, p. 1038.

Tentative standards for several tests have been prepared and tried. These include bonding strength, permeability, fineness, die-absorption, and chemical analysis. Progress has been made by the Committees on Conservation and Reclamation, and on Geological Surveys.

Electrical Core Losses.—The object of this investigation is to reduce the calculation of electrical core losses as well as of eddy current losses in machines and conductors to a more rational and scientific basis. Four phases of the work are being conducted by four universities: Harvard, Washington (St. Louis), Missouri, and Massachusetts Institute of Technology. Several manufacturers are also co-operating.

A bibliography of literature on the subject of core losses is being prepared, and two papers giving results of the work of the Committee are nearing completion and will probably be published in the *Journal* of the American Institute of Electrical Engineers.

Physical Changes in Iron and Steel Below the Thermal Critical Range.—This study was made to correlate experimental results of deformation of iron and steel in the blue heat range at ordinary and slightly higher temperatures, accompanied by a change in physical properties usually called "ageing", and to study the effect of temperature on the mechanical properties of iron and steel, particularly boiler-plate.

Two papers by Messrs. H. J. French and Zay Jeffries, entitled "Tensile Properties of Boiler Plate at Elevated Temperatures" and "Physical Properties of Iron and Steel Below the Thermal Critical Range", were presented at the February, 1920, meeting of the American Institute of Mining and Metallurgical Engineers. A paper on "Slip Interference Theory of the Hardening of Metals" by Messrs. Zay Jeffries and R. S. Archer was published in *Mining and Metallurgical Engineering* for June 15, 1921. The evidence presented in these reports shows that rolling and forging steel or iron without closely regarding temperatures may harm the product. Useful variations in properties produced by deformation in the blue heat range may also be possible. A series of papers by Messrs. Zay Jeffries and R. S. Archer published in *Chemical and Metallurgical Engineering*, June 15 to November 1, 1922, issues, completed the work of the Committee, and at the February 23, 1923, meeting of the Division of Engineering, it was discharged.

Electrical Insulation.—This subject is being investigated to obtain knowledge of the phenomena of electrical insulation on which the solution of practical problems can be based.

A statement of the problem including the history, functions, and properties of insulation, plan of attack, and problems needing investigation, was published in the June, 1923, *Journal* of the American Institute of Electrical Engineers.

Welded Rail Joints.—The object is to improve each of the four methods now used commercially for making welded rail joints for street railways.

A committee has been organized, including street railway experts, scientists, testing experts, and welding engineers. A 73-page bulletin showing the

variety of methods in vogue and the technique used in making street railway joints has been compiled.

A program, requiring a series of test specimens, representative of the different methods used in making street railway joints, has been prepared, and most of the specimens designated in the program have been shipped to the various laboratories where they will be tested. Two machines will be built at the U. S. Bureau of Standards for the use of the Committee, one of them, a rotary service testing machine that will subject the joints to as much wear in one month as they would receive in approximately ten years of service; the other machine is designed to give test joints repeated blows of a magnitude equal to those received in service from a car wheel passing over a cupped joint. The designs of the two machines have been completed and an appropriation of \$14 000 has been made for their erection. The funds and material needed to complete the \$80 000 program outlined have been promised or secured.

Training of Welding Operators.—This study is being made as the preparation of an outline that, if followed, will insure the training of competent welders with a minimum of time and effort.

A personal research, involving the experience of experts of the Federal Board of Vocational Education, National Research Council, and American Welding Society, was made and a course prepared. This course consists of two parts, one on the training of oxy-acetylene welders, and the other on electric welders. The first course has been reprinted in bulletin form by the American Welding Society and is available for distribution.

Advisory Board on Highway Research.—This investigation is being made to assist in outlining a comprehensive National program of highway research and the co-ordinating of the activities thereunder, to organize specific projects, and to act in a general advisory capacity.

A bulletin containing the proceedings of the Second Annual Meeting, which has been released for distribution, includes a summary of the development of the Board, a review of the problems of the research sub-committees, a report of the Director, and reports of the various research sub-committees.

Heat Treatment of Carbon Steel.—The object of this study is to increase the knowledge of the influence of heat treatment on the mechanical properties of carbon steel, especially the conditions which most advantageously set up the sorbitic state, the most valuable for engineering purposes.

The method has been to subject specimens of steel of the carbon contents most used for engineering work, 0.34%, 0.52%, and 0.75%, and most suited to sorbitizing, to various heat treatments, and to test the mechanical properties thus induced.

A report by Messrs. Henry M. Howe, Francis B. Foley and J. Winlock, consisting of 47 pages and including test data, charts, curves, photographs, and formulas, was published recently by the American Institute of Mining and Metallurgical Engineers. The Committee is being re-organized and a program of investigations is being prepared to obtain information and data still lacking.

Welding of Oil Storage Tanks.—This study is being made to design a welded storage tank which will enable the reduction of loss of the lighter oils from leakage and evaporation now occurring in the present riveted construction.

The designs of two 5 000-bbl. tanks have been completed, one tank to be constructed by the electric arc process and the other by the oxy-acetylene welding process. A report of the electric arc method, including specifications, was published in the December, 1922, issue of the *Journal* of the American Welding Society. A report on the oxy-acetylene welding method, which was published in the June, 1923, issue of the *Journal* of the American Welding Society, includes photographs of two tanks constructed according to this method.

Applications of Arc Welding in Ship Construction.—The object of this study has been to prepare a review of the best information on this subject and to compile data which will be useful to the engineer and designer in effecting economies through its application.

A report has been prepared by E. H. Ewertz, General Manager of the Moore Plant of the Bethlehem Shipbuilding Company, under the guidance of the Electric Arc Welding Committee, and is now being published as a serial in *Marine Engineering*. The report includes cost figures, test data, relative advantages of welding *versus* riveting, service results of applications, and different designs of welded ships.

Activities of Local Sections*

Meetings of the Los Angeles Section

A meeting of the Los Angeles Section was held at the University Club on June 13, 1923; President Franklin D. Howell in the chair, and, also, in the absence of Secretary Dessery, acting as Secretary *pro tem.*; and present, also, 33 members and guests.

The following resolution prepared by Messrs. Milo C. Halsey and S. A. Jubb was adopted:

"Whereas, on Easter Sunday, April the 1st, 1923, the final summons came to our friend and brother engineer, Edward Thomas Flaherty, calling him to his last resting place, and,

"Whereas, by his passing, not only has the engineering profession sustained the loss of an engineer of high ideals and noteworthy accomplishments, but in a larger sense, the community has suffered the loss of a useful and public spirited citizen, and his own immediate family, by this bereavement, has been brought to know the greatest personal loss of all, a devoted husband and father.

"Now, therefore, the Los Angeles Section, American Society of Civil Engineers, feeling keenly the sense of loss occasioned by the death of Edward Thomas Flaherty and in grateful remembrance and appreciation of his worth and value to this Section, hereby desires to convey to the members of his family its sincere condolences in their hour of grief and to express the hope that they may derive spiritual comfort, from the significance of his being called to his Eternal Home, on the anniversary of the Resurrection of our Lord.

"In furtherance of the above, it is resolved that a copy of this resolution be transmitted to the family of our deceased member, and further that this resolution be incorporated in the records of this Section."

The resolution prepared by Messrs. A. L. Sonderegger and Harry F. Blaney in reference to the death of the late Clarence Everett Tait, M. Am. Soc. C. E., was adopted, as follows:

"Whereas, it has pleased the Almighty to take from us our beloved fellow-member and associate Clarence Everett Tait, and

"Whereas, through his going away we have sustained the loss of an able brother engineer whose professional knowledge and achievements were generally recognized; and an advisor who was ever ready to give information and advice to those that called on him for assistance; and a friend who had a good word for all his fellow members, and was ever welcome in the circles of our Society.

"Therefore, Be It Resolved, that this resolution be entered upon the permanent records of the Los Angeles Section, American Society of Civil Engineers, and a copy be sent to his bereaved family with our sincere and heartfelt sympathy in their affliction.

"We know that Mr. Tait's good work still lives on with his memory as of a man that filled his post. We shall miss him from our midst but know that he has gone to a higher and broader life."

Relative to the report of the Committee appointed to report on his suggestion for overhead construction for passageways for traffic relief in the business district, Mr. S. A. Jubb requested that, as this measure was an emergency matter, the Committee be asked to report at an early date. The Secretary was advised to take up this question with the Committee.

* For list of Local Sections, Officers, Rules, etc., see 1923 Year Book, p. 15, and p. 527.

President Howell presented a letter from Mr. Robert Ridgway, Secretary-Treasurer of the Alfred Noble Memorial Committee of the Society, relative to the appeal of that Committee for funds, and, on motion, duly seconded, the Secretary was instructed to prepare a brief statement of the appeal and include such statement in the notices for the July meeting.

Major Glen E. Edgerton, Corps of Engineers, U. S. A., addressed the meeting on "Experiences with the Red Cross in the Near East", in the course of which he discussed the question between the Turks, Armenians, and Greeks, and described the methods of handling, feeding, and clothing them.

In an address on "Post-War Impressions of the Near East", Mr. L. W. Wickes described a trip over a part of the territory covered by Major Edgerton and also through Turkey in the interests of mining development, including many interesting personal impressions gathered therefrom, as well as the methods and operations of the English and French officers in the occupied territory.

On motion, duly seconded, a vote of thanks was extended to Major Edgerton and Mr. Wickes.

MEETING OF JULY 11, 1923

A meeting of the Los Angeles Section was held at the University Club on July 11, 1923; Vice-President W. H. Code in the chair; F. G. Dessery, Secretary; and present, also, 40 members and guests.

In response to his introduction, H. N. Savage, M. Am. Soc. C. E., of San Diego, Calif., addressed the meeting on the "Municipal Water Supply of San Diego and Possible Additional Resources", illustrating his remarks with many stereopticon views, which address was followed by a general discussion with questions.

On motion, duly seconded, a rising vote of thanks was extended to Mr. Savage.

Vice-President Code introduced Gen. A. A. Fries, U. S. A., Chief of the Chemical Warfare Service of the Army, who spoke of the work of the engineer and the gratifying results obtained by him in the prosecution of his work.

NEW OFFICERS OF THE DULUTH SECTION

At the Annual Meeting of the Duluth Section on May 21, 1923, the following officers were elected for the ensuing year: President, Thomas F. McGilvray; First Vice-President, O. H. Dickerson; Second Vice-President, E. H. Dresser; Secretary, Walter G. Zimmerman; and Treasurer, John Carson.

Minutes of Meetings OF THE SOCIETY

Fifty-Third Annual Convention Held in Chicago, Ill.,
July 11-13, 1923

First Session

Wednesday, July 11, 1923.—The Fifty-Third Annual Convention of the American Society of Civil Engineers was called to order at the Drake Hotel, Chicago, Ill., at 10:07 A. M.; H. R. Safford, M. Am. Soc. C. E., President of the Illinois Section, presiding; John H. Dunlap, Secretary; and present, also, about 700 members and guests.

THE CHAIRMAN.—In performing the brief service of calling this assembly to order, may I, on behalf of the resident members of the Society, extend to you a cordial personal greeting and welcome. Here, in Chicago, we feel that we are getting a little more than a fair share of honors in having one of our members the President of the Society and in having Chicago selected as the place for this meeting. We hope that the program that has been arranged will prove to be profitable and pleasant. The Committee on Arrangements has requested me to state that while you are here, we are not only your hosts, but your servants, and we will be happy and glad at all times to meet any demand that you may make.

We are especially honored this morning by the presence of our esteemed Mayor who has very gladly come to extend to the meeting a word of welcome. I take great pleasure in introducing His Honor the Mayor, William E. Dever. (Applause as all rise.)

MAYOR DEVER.—Gentlemen of the American Society of Civil Engineers, I am leading a rather busy life these days, and have made it a practice since my inauguration not to accept invitations of this kind for a variety of reasons. One sufficient reason is that I do not have the time to attend the meetings nor to prepare the addresses.

The presence in Chicago of so old and distinguished a Society is one that peculiarly appeals to the people of this city and to its Mayor.

Many of the problems in Chicago are solvable only by the aid of such organizations as this Society. Now that the country is at the beginning of a great constructive era, I suppose that the future of Chicago will depend more largely on the aid and the assistance that may be given by your members than, perhaps, by any other single agency of which I know. So I felt that I should violate my rule and come here this morning. (Applause.)

Your presence in Chicago at this time is fraught with somewhat pointed significance. I suppose your distinguished President knows far more than I do about the railway terminal problems of the immediate future in Chicago. I just asked him if it was not true that his Society, or its personnel, had not taken an active part in politics, and he informs me that that is not quite true that they do take an active part in politics. In Chicago, \$150 000 000 of the

taxpayers' money is being spent annually, but I do not recall a single engineer of outstanding reputation and high ability who is interesting himself in Chicago politics.

I do not state that by way of criticism. I believe that our great municipalities—and I know only about the local conditions—will find it impossible to give good government, or to do the great constructive things that must be done in cities like Chicago, unless the engineers who make up the personnel of this great Society will find it possible to devote some of their time to the public welfare, because our problems are immense. As I have said, our work will not be well done, it will not even be passably successful unless we have the right to call for your aid and assistance, because fundamentally the great things that we must do here are engineering problems, not solvable by any one but the engineer. We think we have a right to call upon you, to appeal to your patriotic side, to ask you to take a very lively interest in our affairs.

Take, for instance, the great work that the Chicago Plan Commission has been doing for twenty years. That work deals only with providing the great arteries of commerce and transportation, the streets and boulevards.

We are now at the beginning of a constructive period, and we must call on engineers for aid, or the work cannot be done. Take the railway terminal problems in this city. Fifteen or sixteen transcontinental railways have their terminals in Chicago, most of which are in the south section of the city, coming into what we popularly call, the neck of the bottle. South of Randolph Street, the Chicago River deflects toward the east, leaving a narrow strip of land about three-quarters of a mile wide at that point. At that one place there is entering this city by way of railway terminals the freight and passenger traffic from all over the United States. In addition, there is pouring into that same place, the most inconvenient of all places in Chicago for that purpose, the great local transportation traffic. A condition has been created that the engineers of Chicago are called on to solve. I think it is solvable. Land values have increased to such an extent in that neighborhood that it is almost prohibitive to change these great railway terminals and to place them where they will be convenient for the people and where the best interests of Chicago and the owners will be conserved.

I mention these things because I am here to-day to appeal to you to help these great cities that have to deal with these problems. I have been educated as a lawyer and have spent many years on the bench. I am unfitted, therefore, as are most men who have taken a part in public affairs, to solve these questions. They are not in line with our training and education. In the last analysis, we must appeal to the Civil Engineer, because human progress can be best served by engineers taking a part in politics. The engineers of this nation should become an integral part of the political body,—should know what we are doing and what we are trying to do. (Applause.)

Engineers must step out of their professional, and their personal lives, at least for a part of the time, and go to the seats of government, to the City Halls, and to the State Houses, find out what is going on there, indulge in friendly, constructive criticism of what we are trying to do, and aid us in

this work, because, after all, the future of humanity is largely connected with the constructive things that are being done, or to be done, in these great municipalities.

I hope your visit to Chicago will be pleasant. I know it will be profitable to Chicago. I would like to have you consider our local conditions, and aid in so far as you can consistently with your advice, because we are badly in need of your assistance at this very moment.

I extend to you in accordance with the ancient custom, the keys of the City. Anything that the City Government can do to make your visit pleasant will be done. I am sure that you and your officers will find a very cordial feeling in the City Hall. We will be glad to aid you in any way. (Applause as all stand.)

CHARLES F. LOWETH, PRESIDENT, AM. SOC. C. E.—Mr. Mayor, Mr. Chairman, Members of the American Society of Civil Engineers, and Ladies: It is my very pleasant duty in behalf of the Society to thank you, Mr. Mayor, for your very generous welcome. We are all, I am quite sure, delighted to be here. This is the fourth time that the Society has been in this city in attendance at its Annual Convention. The first was 49 years ago, since which date both the Society and this great city, of which you have the honor to be the Chief Executive, have made wonderful growth.

The Society was here again in 1893. This was the year of the World's Columbian Exposition, and at that time, largely sponsored by the Society, there was held a World's Engineering Congress, attended by prominent engineers from all parts of the world. The Society again visited Chicago about twelve years ago and is here again to-day. I am sure that I voice the sentiments of every member present when I say that we are glad to be here and are especially happy in the whole-hearted welcome which we have had from you, Mr. Mayor, and from the other members of your Cabinet. I call the attention of the members present to this booklet which has been prepared for this occasion by the members of the Bureau of Engineering of this city. On the first two pages there are very cordial greetings from two of Mayor Dever's Lieutenants: The first is from the Commissioner of Public Works, Mr. Sprague, whom the Mayor has referred to as the very busy and prosperous business man who has laid aside his business for a while so that he might help in the great constructive things to be done in this city, some of which the Mayor has initiated and which we of Chicago know he will in due time accomplish, things that are worth while not only for this city, but for the Nation. On the second page is the other greeting from an honored member of the Society, Mr. John Ericson, the City Engineer. (Applause.) Mr. Ericson has been for many years City Engineer, and for a much longer period has been identified with the Bureau of Engineering of this city.

It may be interesting in this connection, Mr. Mayor, to recall that one of the early Presidents of the Society was Mr. E. S. Chesbrough. This was in 1877. Mr. Chesbrough was also one of the early City Engineers of Chicago. He was a man highly honored in his time, and the record of the very

excellent work he did, especially as City Engineer of this great city, is an enduring monument to his skill and usefulness.

The programs for our meetings pertain largely to matters of Transportation. We have felt, Mr. Mayor, that in this city particularly, such problems would not only be interesting to engineers of all branches of the profession, but would also be a profitable subject for discussion, with the hope that the papers and discussions on this important subject might be of substantial value in helping to solve some of the problems with which Chicago is now face to face. Our program, however, includes more subjects than those pertaining to Transportation. It includes Sanitation, Water Supply, City Planning, and other subjects, in which this and other municipalities are deeply concerned.

I am glad, Sir, that you asked whether the members of this Society were interested in politics, and that you said what you did about the interest which engineers should take in politics. While this Society is not a political organization, its membership is made up of professional engineers who at the same time are intelligent citizens interested in all matters of public concern. I am sure they are contributing their part in the solution of all such problems. To the extent to which the Engineering Profession can contribute to the welfare of the community, by virtue of its specialized knowledge and experience, the members of this and other similar societies of professional engineers are, I am confident, ready and willing to be of service.

I desire, also, in behalf of the Society through you, President Safford, to thank the officers and members of the Local Section, for the welcome which you have so heartily extended and the preparations so thoroughly made for the success of this Convention.

Again, Mr. Mayor, in behalf of this Society, I thank you for your very cordial welcome; we wish you much success in the good work you are planning for this great city. (Applause.)

(President Loweth took the chair and presided.)

(President Loweth presented the Annual Address.*)

First Technical Session

THE PRESIDENT.—We come now to the second part of the program, the presentation of technical papers on the subject of Railroad Transportation. It has been the thought of the Committee in preparing this technical program that this general subject would be especially opportune in this city, at this particular time, when the railroad problem is one of so much importance. All the papers will be by engineers and will cover in a broad way various phases of the problem on which engineers are especially qualified to speak.

(President Loweth introduced John W. Kendrick, M. Am. Soc. C. E., who presented a paper entitled "Some Phases of Present-Day Railroad Transportation".†)

THE PRESIDENT.—Mr. Kendrick, on behalf of the Society, I thank you for your paper. This paper, together with papers which will follow, will be

* See p. 1363 of Papers and Discussions.

† See Papers and Discussions, p. 1406.

open for discussion, and we hope that the members will bear that in mind. There will not be opportunity for discussion from the floor, but there will be written discussion later.

(President Loweth introduced John G. Sullivan, M. Am. Soc. C. E., who read a paper on "Transportation as Related to National Development."*)

THE PRESIDENT.—We have with us this morning, a member of the Society who is also the President of the American Society of Mechanical Engineers, Mr. John L. Harrington. I would like to have Mr. Harrington come forward and sit on the platform. (Applause.)

The next paper is on "Railroads—The Arteries of Commerce," by Mr. J. Rowland Bibbins.† Unfortunately it was impossible for Mr. Bibbins to be here. This excellent paper, in which the subject is discussed very exhaustively, will be read by Mr. Howson.

(E. T. Howson, M. Am. Soc. C. E., reads Mr. Bibbins' paper.)

(President Loweth introduced Edwin F. Wendt, M. Am. Soc. C. E., who presented a paper on "Federal Valuation of Railroads."‡)

(President Loweth presented C. A. Morse, M. Am. Soc. C. E., who read a paper entitled "Consolidation of Railroads."§)

THE PRESIDENT.—A few minutes ago I asked Mr. John L. Harrington to come forward. I think he is in the room now and we welcome him to the platform. (Applause as Mr. Harrington takes seat on the platform.) Also, E. H. Lee, M. Am. Soc. C. E. Mr. Lee is President of the American Railway Engineering Association. (Mr. Lee not present.)

I have also invited to the platform Onward Bates, Past-President, Am. Soc. C. E., who needs no introduction, and who is very much beloved by hundreds of the engineers of this country. (Applause.) Mr. Bates, at considerable sacrifice, is serving this city very ably as a member of the Bureau of Public Efficiency.

(President Loweth next introduced John S. Worley, M. Am. Soc. C. E., who presented a paper entitled "Consolidation of Railroads."¶)

THE PRESIDENT.—I wish to thank the authors of all the papers which have been presented for the very interesting and instructive manner in which they have treated these various subjects. Their remarks will be printed, and, as stated previously, there will be an opportunity for written discussion.

Business Meeting

THE PRESIDENT.—We come now to the end of the technical program. The Constitution requires a Business Meeting of the Society to be held at this time. This Business Meeting is very important; and as it also will be very brief, I hope that the members will stay through it.

The Board of Direction at its meeting of July 10, 1923, adopted a resolution with respect to the murder of John Earl Shoemaker, Assoc. M. Am. Soc.

* See Papers and Discussions, p. 1413.

† Loc. cit., p. 1417.

‡ Loc. cit., p. 1432.

§ Loc. cit., p. 1440.

¶ Loc. cit., p. 1448.

C. E., in the Herrin massacre about a year ago. I will ask the Secretary to read that resolution.

(Secretary Dunlap read the resolution.*)

E. E. WALL, M. AM. SOC. C. E.—I move you, Sir, that this meeting approve the action of the Board of Direction, and that this meeting endorse the resolution which that Board passed.

(The resolution was seconded by J. H. Brillhart, M. Am. Soc. C. E., and carried unanimously.)

THE PRESIDENT.—I think there is no doubt but what the members of this Society are advised that within the last few days what seems to us clearly a case of politics, and bad politics at that, has resulted in the summary removal from office of the Director of the U. S. Reclamation Service. This matter has had the consideration of the Board of Direction which, at its meeting on July 10, 1923, adopted an appropriate resolution with reference thereto. I will ask the Secretary at this time to read that resolution and the statements of fact on which it is based.

(Secretary Dunlap read the resolution and the reasons for its adoption by the Board of Direction.†)

HARRISON P. EDDY, M. AM. SOC. C. E.—It has sometimes been felt that engineers, and perhaps particularly members of this Society, have been slow to make their influence felt in departmental work and Government functions. This appears to be an opportunity for the members of this Society to take action, and they should make their views known in no uncertain terms. It is not a matter of expressing our appreciation of the Director personally, nor perhaps of placing on record our appreciation of the splendid professional services which have been rendered, but rather a duty of citizens of this country who are peculiarly well qualified to judge of the dangers resulting from such summary action, and from the effect on the *esprit de corps* of the personnel, not only of this Department, but other departments, which should call for the action of this meeting.

Mr. President, I move that this resolution and action be adopted.

A MEMBER.—Mr. President, I want to make an emphatic second to that motion.

G. AERTSEN, M. AM. SOC. C. E.—I think in this connection it is well to bear in mind the advice and request that his Honor, the Mayor, gave us in his address a few hours ago, asking us to get into politics. This is the first opportunity we have had.

(The motion was unanimously carried.)

THE PRESIDENT.—I have at this time an announcement to make which I do with very much regret. I hoped that at this meeting I could invite to the platform a man who is very well known throughout the entire world as an outstanding engineer, identified as perhaps no other engineer has ever been with the iron and steel industry. I refer to Captain Robert W. Hunt, who died this morning at 7:00 o'clock. Captain Hunt has been very much

* See p. 517.

† *Proceedings*, Am. Soc. C. E., August, 1923, p. 338.

honored, and deservedly so, by many Engineering Societies. In addition to being a member of this Society, he was a Past-President of the American Institute of Mining and Metallurgical Engineers and of the Western Society of Engineers. The Board of Direction, at its meeting yesterday, without knowledge that Captain Hunt was sick, nominated him for Honorary Membership. Captain Hunt was in his 84th year and had been active until within the last few days. He had a multitude of friends and will be greatly missed, and the Engineering Profession has lost an honored member. His memory, however, will be an inspiration to those that come after.

The Secretary has some announcements to make, and with those announcements, this meeting will adjourn.

(Secretary Dunlap made announcements with regard to the meetings, discussions, and entertainments.)

THE PRESIDENT.—Are there any members here who have any new business to present? If not, the meeting will now stand adjourned.

Second Technical Session

Thursday, July 12, 1923.—The second Technical Session was called to order at 10:05 A. M.; President Charles F. Loweth in the chair; John H. Dunlap, Secretary; and present, also, about 700 members and guests.

THE PRESIDENT.—The meeting will please come to order. There are nine papers to be presented this morning, covering very important subjects. There will perhaps be no opportunity for oral discussion, but there will be abundant opportunity later for written discussions, and I hope that the subjects will prove to be of sufficient interest so that the written discussions will be quite voluminous.

The subject for the morning is Railroad Terminals, and Mr. Safford, the President of the Illinois Section, who is well qualified will at this time present a general introduction of the subject.

(Mr. Safford introduced the subject.) (Applause.)

(President Loweth introduced Alfred Fellheimer, M. Am. Soc. C. E., who discussed the "Principles of Terminal Station Design."*) (Applause.)

(Charles E. Smith, M. Am. Soc. C. E., was next introduced and discussed "The Railroad Freight Terminal Problem in St. Louis, Missouri."†) (Applause.)

(President Loweth introduced Jacob L. Crane, Jr., Assoc. M. Am. Soc. C. E., who presented a paper on "Street Development in Relation to Railroad Terminals."‡) (Applause.)

(The next speaker was Daniel J. Brumley, M. Am. Soc. C. E., whose subject was the "Chicago Terminal Improvements, Illinois Central Railroad."§) (Applause.)

* See Papers and Discussions, p. 1455.

† Loc. cit., p. 1464.

‡ Loc. cit., p. 1519.

§ Loc. cit., p. 1526.

(Frederick E. Morrow, Assoc. M. Am. Soc. C. E., was next introduced and discussed "Chicago Terminal Improvements, Dearborn Station Group."*) (Applause.)

(President Loweth introduced Robert H. Ford, Assoc. M. Am. Soc. C. E., who presented a paper on the Chicago Terminal Improvement, Chicago, Rock Island and Pacific and New York Central Railways."†) (Applause.)

(President Loweth then introduced Mr. J. D'Esposito of Chicago, Ill., whose subject was the "The Chicago Union Station Development."‡) (Applause.)

(Major Rufus W. Putnam, Corps of Engrs., U. S. A., of Chicago, Ill., was the next speaker and discussed the "Modern Rail and Water Terminals, with Particular Reference to the Situation at Chicago, Illinois.") (Applause.)

(President Loweth introduced William L. R. Haines, M. Am. Soc. C. E., who presented a paper on the "The Modern Freight Terminal of the Pennsylvania Railroad System in Chicago, Illinois.") (Applause.)

THE PRESIDENT.—I wish at this time, in behalf of the Society, to thank the authors of the several papers which have been read at this meeting; they have all been very interesting and profitable. It is obvious that the authors have spent a great deal of time in their preparation, and I regret that it has been necessary to limit the time allowed for their presentation and that there has been no opportunity for discussion. As previously stated, however, written discussions on all these papers will be welcomed and published in *Proceedings*.

It has sometimes been asserted that this Society was a purely technical one. I think it is something more. I hope the members have noted the character of the papers presented at this Convention; they have not been purely technical, but have handled in a broad and large manner some fundamental economic and civil problems of great importance. The authors, through these papers, and the Society, by bringing about their presentation in this public manner, have thus made it possible for the Engineering Profession to make a worth-while contribution to the public good. That these papers and their discussions will be welcomed and will prove to be profitable, I have no doubt, and especially so in view of the statements contained in the address of welcome which the Mayor of this great city extended to this Society at the opening of this Convention.

Announcement was made yesterday of the death of our much beloved and honored member, Captain Robert W. Hunt. Mr. A. F. Reichmann has a resolution that he would like to present at this time.

The registration is reported now as 685. (Applause.)

A. F. REICHMANN, M. AM. SOC. C. E.—I wish to present the following resolutions:

"Whereas, very quietly our friend has gone from us, within the hour almost we were purposing to add to his honors, and before we could send him the

* See Papers and Discussions, p. 1535.

† *Loc. cit.*, p. 1539.

‡ *Loc. cit.*, p. 1545.

§ *Loc. cit.*, p. 1552.

|| *Loc. cit.*, p. 1585.

message he was gone. But many other messages there were that he had received, and all because he himself had compelled them, tributes to his skill and to the loveliness of his character; and

"Whereas, many years ago we found him with his mother in Pennsylvania, and we greatly approved the grasp which he then took upon things which formed the bases of his profession and his career. In his night watches in the mills at Elmira; in his marches with the Pennsylvania Volunteers; in his inventions and in his authorship; in his management of great enterprises; in his establishment and distinguished conduct of a remarkable business; in his degrees, and in his high offices, we have watched his career and sent him constant word of our approval and of our respect and great love, so that he might know of these things while he was still with us; until we could honor him almost no more, for it came to be that it was he who was honoring us, and all that was left was that we should be very proud on account of this man, who was great and sweet and clean; whose stamp of skill and of service untold was found in every continent; and

"Whereas, for such as he there is no death;

"Therefore, Be It Resolved, loving him to-day as we did yesterday, vividly conscious of his spiritual presence among us, we express this last word of tribute to Robert Woolston Hunt: a gentleman amongst men and a man amongst gentlemen; scientist; engineer; philanthropist; distinguished citizen; patriot, and gentle friend; extending at the same time to his family our deepest sympathy in the bereavement which they have sustained."

(On motion, duly seconded, these resolutions were carried unanimously.)

THE PRESIDENT.—Mr. Nethercut has a word that he wants to say to us at this time.

EDGAR S. NETHERCUT, M. AM. SOC. C. E.—Mr. President and Gentlemen of the American Society of Civil Engineers: In this morning's paper the Mayor of the City of Chicago was quoted as follows: "Constructive criticism from the City Club or the Western Society of Engineers or similar organizations would be welcomed by me." This word, coming as it did, directly after the address of welcome and the extended remarks of the Mayor, has a distinct interest to us and to the Engineering Profession. Why did he separate and designate the City Club of Chicago and the Western Society of Engineers? They have many things in common. They are all inclusive in their groups, in so far as their membership is concerned. The City Club includes professional men of all kinds, business men and independent citizens; the Western Society of Engineers is likewise an all-inclusive society, representing all branches of the Engineering Profession. They have one other thing in common, that they are supported by small contributions from all of their membership. In that respect, they are distinguished possibly from other groups of smaller numbers of men who are brought together for some specific purpose, and sometimes financed largely by citizens whose motives are many times misunderstood.

The message that I have is this, that if in each locality throughout the United States there can be groups of engineers who interest themselves in civic matters, they can make the same impression on the city government that has been made here. It has taken years to build this up, but it has resulted in success, as indicated by the remarks of the Mayor. When we have these local groups of citizens—engineer citizens—who are acquainted

with each other and with their local problems, then, and only then, in my judgment, can we step forward into the affairs of the State and the affairs of the Nation and build up a representative group in this country which will have a power and do a constructive citizen's work.

In concluding, I repeat the words of the Mayor: "Constructive criticism from the City Club, or the Western Society of Engineers, or similar organizations would be welcomed by me." This is not referred to as a record of accomplishment, but as a challenge to our citizenship. (Applause.)

(Mr. Condrón made announcements regarding trips and Technical Division meetings.)

(Secretary Dunlap made announcements with regard to the meetings, boat trip, railroad certificates, etc.)

THE PRESIDENT.—I desire especially to call attention to the boat trip tomorrow. I think it is something that you will very much regret if you pass it by.

Gentlemen, the meeting stands adjourned.

OF THE BOARD OF DIRECTION

This is an abstract of the notes of the Secretary and subject to approval by the Board of Direction at its next meeting.

July 9, 1923.—The Board met at 10:42 A. M., at the time of the Annual Convention, as required by the Constitution, at the Drake Hotel, Chicago, Ill.; President Charles F. Loweth in the chair; John H. Dunlap, Secretary; and present, also, Messrs. Brown, Chester, Condrón, Darrow, Davis, Dyer, Fenkell, Freeman, Grunsky (came in at 11:00 A. M.), Hogan, Holland, Huber (came in at 10:55 A. M.), Humphrey, McConnell, Marston, Ridgway, Talbot, Whitman, and Winsor.

On motion, the minutes of the meetings of the Board of Direction held April 16 and 17, and May 28, 1923, were approved.

On motion, the minutes of the Executive Committee meetings of May 4, May 28, and June 25, 1923, were approved and the actions therein outlined adopted as the actions of the Board.

The following is abstract of these minutes:

ABSTRACT OF MINUTES OF MEETING OF EXECUTIVE COMMITTEE, MAY 4, 1923

The Executive Committee met at 2:50 P. M.; President Charles F. Loweth in the chair; John H. Dunlap, Secretary; and present, also, Messrs. Holland, Ridgway, Webster, and Winsor.

It was announced that the minutes of the last meeting of this Committee held on March 31, 1923, had been approved by the Board of Direction at its meeting of April 16, 1923.

MASSACRE IN HERRIN, ILL.

It was reported that letters had been received from M. W. Weir, M. Am. Soc. C. E., and Leslie S. Marshall, Assoc. M. Am. Soc. C. E., calling attention

to the massacre at Herrin, Ill., in which John Earl Shoemaker, Assoc. M. Am. Soc. C. E., was one of the victims. These gentlemen also point out that the perpetrators of the crime had not yet been brought to justice. This is due, in their opinion, to the fact that no convictions could be had in the county in which the crime occurred. They bring this matter to the attention of the Society in the hope that it may take some action. After discussion, as to ways and means of taking effective action, possibly by forwarding to the Governor of Illinois, the Attorney-General, and the Chairman of both Houses of the Legislature, copies of resolutions condemning this crime and publishing them in *Proceedings*, the matter was referred to the Secretary for further investigation and if it seems justifiable such resolutions are to be forwarded and published.

PHILADELPHIA SESQUI-CENTENNIAL

A letter was presented dated April 19, 1923, from the Sesqui-Centennial Exhibition Association, stating:

"We are now moving forward rapidly toward the point of active work of constructing the material plant for the Sesqui-Centennial Celebration of the Declaration of Independence in Philadelphia in 1926.

"The one hundred and fiftieth anniversary of the Declaration of Independence is a subject of deep concern and patriotic interest to all people of the nation, and to their organizations in many lines of activity. The celebration of 1926 must have the interest of all if it is to have the pre-eminent usefulness attainable by the opportunity offered.

"In view of this, we beg to inquire whether you would not like to have one of the officers or directors of the Sesqui-Centennial Association meet with you at your convention in Philadelphia for the purpose of explaining the present status, scope, and plans of the celebration.

"We would also like you to give consideration to the appointment of a Sesqui-Centennial Committee which can keep your Society informed of the progress here, and take such other action, related to this subject, as may from time to time seem for the general welfare and the welfare of your own body."

On motion, the Society's representatives, Messrs. George S. Webster and Richard L. Humphrey, in connection with the International Engineering Congress to be held during the Sesqui-Centennial, were appointed a Committee to keep the Board informed of progress.

NEW CONSTITUTION OF THE PORTLAND SECTION

There was presented to the Board at its meeting of April 3, 1922, a proposed new Constitution of the Portland Section of the Society, which was in correct form except for Article VI, Amendments, which provides that "The Constitution may be amended only by an affirmative vote of two-thirds of all ballots cast by members of the Section." It should contain the clause "provided the total number of voters shall be not less than a majority of the whole membership."

The action of the Board was to approve the new Constitution provided it is changed to conform to the standard.

For the record, it was reported that the necessary change has been made and the Constitution is now in correct form.

AMERICAN ENGINEERING STANDARDS COMMITTEE INVITES SOCIETY'S REPRESENTATIVE TO CRITICIZE PROPOSED SPECIFICATIONS FOR MANILA ROPE

There was presented to the March 1, 1923, meeting of this Committee an invitation from the American Engineering Standards Committee to this Society to appoint a representative to criticize proposed specifications for

Manila Rope, and the action taken was to authorize the President to make such appointment.

For the record, it is now reported that C. R. Dart, M. Am. Soc. C. E., has been appointed as such representative and has accepted.

THE PROPOSED SPECIFICATIONS OF FEDERAL SPECIFICATIONS BOARD

At the March 12, 1923, meeting of this Committee, an invitation from the American Engineering Standards Committee was presented to this Society to submit proposed specifications of the Federal Specifications Board, for Coal Tar Pitch for Roofing; Surfacing Materials for Bituminous Built up Roofing; Sheathing Paper and Unimpregnated Rag Roofing Felt; Coal Tar Saturated Rag Felt for Roofing and Waterproofing, to representatives of the Society who are in a position to determine to what extent such specifications are satisfactory, such criticism to be treated as being wholly informal and not binding on the Society.

For the record, it is reported that President Loweth subsequently appointed Messrs. W. T. Dorrance, G. W. Hand, and E. B. Wilson as the Society's representatives in this matter, without payment of mileage.

INAUGURATION OF PRESIDENT MARVIN OF THE UNIVERSITY OF ARIZONA AND DEDICATION OF STEWARD OBSERVATORY

For the record, it was reported that President Loweth had appointed John C. McClure, M. Am. Soc. C. E., to represent the Society at the inauguration of Cloyd Heck Marvin as President of the University of Arizona and at the dedication of the Steward Observatory, on April 23 and 24, 1923, at Tucson. Mr. McClure's report covering his attendance at these ceremonies was presented.

Other matters were discussed informally, but no action of record taken.

Adjourned at 5:20 P. M., to meet at 3 P. M., May 28, 1923.

ABSTRACT OF MINUTES OF MEETINGS OF EXECUTIVE COMMITTEE, MAY 28, 1923

The Executive Committee met at 3:15 p. m.; President Charles F. Loweth in the chair; John H. Dunlap, Secretary; and present, also, Messrs. Holland, Ridgway, Webster, and Treasurer Hovey.

The minutes of the meeting of this Committee held on May 4, 1923, were approved.

HERRIN, ILL., MASSACRE

There was presented to the meeting of this Committee on May 4, 1923, letters from M. W. Weir, M. Am. Soc. C. E., and Leslie S. Marshall, Assoc. M. Am. Soc. C. E., calling attention to the massacre at Herrin, Ill., in which John Earl Shoemaker, Assoc. M. Am. Soc. C. E., was one of the victims. After discussion, the President and Secretary were authorized to prepare resolutions to be forwarded to the Governor of Illinois, the Attorney General, and to the friends of the deceased. Such resolutions are also to be published in *Proceedings*.*

LOSS OF TIME IN CONSTRUCTION

At the meeting of May 4, 1923, consideration was had of the possibility of this Society inaugurating the work of creating joint committees to investigate the nature and causes of lost time in the construction industry and to report possible methods of reducing this economic waste.

* See p. 517.

After discussion, it was moved and carried that the Committee on Public Relations be asked to co-operate with the Federated American Engineering Societies, the Associated General Contractors of America, and other organizations in every possible way in the stabilization of industry, and that those organizations be so informed.

SOCIETY'S REPRESENTATIVE ON SECTIONAL COMMITTEE ON METHODS OF TESTING WOOD, ASKS IF SOCIETY WOULD BE WILLING TO ACT AS SPONSOR FOR WORK PROPOSED.

Correspondence with T. W. Norcross, Assoc. M. Am. Soc. C. E., was presented at the meeting of the Committee on March 1, 1923. Mr. Norcross, the Society's representative on the Sectional Committee on Methods of Testing Wood, of which the U. S. Forest Service and the American Society for Testing Materials are sponsors, asks if such Sectional Committee deems it advisable to extend the work to cover tests of fabricated or manufactured articles, whether the Society would be willing for the American Society for Testing Materials to continue to act as sponsor, or is it believed that the work proposed is more in the province of this Society, and, if so, would this Society be willing to act as sponsor? The Executive Committee referred this matter to the Committee on Research for recommendation. There was presented to the March 31, 1923, Executive Committee meeting various individual letters from the Research Committee, but as these did not show unanimity, the matter was again referred to the Research Committee for further report.

A letter dated May 23, 1923, was presented from Chairman Talbot, of the Research Committee, giving the following as the consensus of opinion of the members of his Committee:

"1.—It is understood that the American Standards Committee concerns itself with standardization of methods and articles. It is further understood that when the subject comes within the scope of one or more established engineering societies the work of standardization generally will not be undertaken until those societies have developed information and discussed results and formulated principles which can be considered by the Committee on Standards. It is also understood that the American Standards Committee, or one of its sectional committees, is not a research organization and is not expected to conduct research or direct activities involving research. The name of this sectional committee is the Committee on Methods of Testing Wood, and it would appear that the field of the Committee is restricted to standardization of methods of testing the material and does not include methods of testing products.

"2.—In view of the foregoing, it appears to the Committee on Research that as articles such as boxes, barrels, axe handles, and wooden trusses are fabricated products, methods for their testing should not be formulated by this Committee, and further that the Committee should in general be expected to keep away from the research field. It would appear also that the motion passed covering the scope of its work by the Committee, as reported in Mr. Norcross' letter, satisfactorily answers the question of Mr. Norcross.

"3.—Whether the subjects of articles manufactured from wood, such as trusses and boxes, should be taken up by a Research Committee of the American Society of Civil Engineers, either by itself or in conjunction with another Society, is a matter which may well be discussed, and the Committee on Research will be pleased to consider and report upon it. It is plain that the work of the Forest Products Laboratory and other laboratories is well worthy of support, and that as the co-operation of societies may be expected to be helpful and stimulating, such co-operation may well be given. Just what form this should take or what help can be given is, of course, a question that should be considered."

On motion, it was decided to ask the Committee on Research to consider and report on whether the subject of articles manufactured from wood, such as trusses and boxes, should be taken up by a research committee of the Society either by itself or in conjunction with another Society.

AMERICAN ELECTRIC RAILWAY ASSOCIATION INVITES THE SOCIETY TO APPOINT A REPRESENTATIVE ON SECTIONAL COMMITTEE TO FORMULATE SPECIFICATIONS

A letter dated May 23, 1923, was presented from Secretary Welsh of the American Electric Railway Association inviting this Society to appoint a representative on the Sectional Committee which is to formulate (a) specifications for materials for use in manufacture of special track work; and (b) design of 7-in. plain girder T-rails for use in paved streets. It is explained that the American Electric Railway Association has accepted sponsorship for this Sectional Committee at the request of the American Engineering Standards Committee, and that the standards which are to be undertaken by this Sectional Committee are undoubtedly of interest to the members of this Society.

On motion, the President was authorized to appoint such representative. Subsequently, President Loweth appointed E. M. T. Ryder, M. Am. Soc. C. E., to represent the Society on such Sectional Committee.

U. S. BUREAU OF STANDARDS INVITES SOCIETY TO APPOINT REPRESENTATIVE ON COMMITTEE ON NON-DESTRUCTIVE TESTING OF WIRE ROPE

A letter dated May 10, 1923, was presented from Acting Director Brown of the U. S. Bureau of Standards inviting the Society to appoint a representative on a Committee to investigate the non-destructive testing of wire rope, the purpose of which is to determine whether any method can be developed for the testing of wire hoisting rope in place, to detect localized sources of danger or any general deterioration which would render the rope unsafe for continued use.

On motion, the President was authorized to appoint such representative with the understanding that mileage would be allowed.

Subsequently, President Loweth appointed Holton D. Robinson, M. Am. Soc. C. E., to represent the Society on such Committee.

SECTIONAL COMMITTEE FOR WALKWAY SURFACES

A letter dated May 24, 1923, was presented from the American Society of Safety Engineers and the American Institute of Architects, which organizations have been designated by the American Engineering Standards Committee as joint sponsors for the preparation of a safety code for walkway surfaces, inviting the Society to designate a representative to act on the Sectional Committee.

On motion, the President was authorized to appoint such representative. Subsequently, President Loweth appointed Amos Schaeffer, M. Am. Soc. C. E., to represent the Society on such Sectional Committee.

REVISED BY-LAWS OF THE SANITARY ENGINEERING DIVISION

It was reported that under date of May 21, 1923, Chairman Allen, of the Sanitary Engineering Division of the Society, had forwarded revised By-Laws, as finally adopted by the Executive Committee of that Division, for approval, copies of which were distributed for the perusal of this Committee.

After consideration, the Secretary was instructed to communicate with the various Technical Divisions of the Society giving them the benefit of the discussion had at this meeting with a view to securing some uniformity in the By-Laws of all Divisions.

September

Co

The r
April 16,
reads:

"No a
old, but
without
work."

The p
of recogn
practice.
view of
Secretar

It wa
newly ad

SOCIETY?

It wa
by Pres
to prep
Central
M. Am.

A bi
attenda
1923.

On
instruct
and to
followe

Pres
Easby,
the Ar
Science

Mes
dent L
Messrs
the So

DELEG

In
this S
Washi
ventio
appoin
Nicho
Frank

CONSTITUTIONALITY OF GIVING CREDIT FOR PART TIME AT COLLEGE

The new definition adopted by the Board of Direction at its meeting of April 16, 1923, in connection with the new method of handling applications reads:

"No account is to be taken of work done before the applicant is 18 years old, but each academic year, successfully completed in an engineering college without graduation, shall be counted as one-third year of sub-professional work."

The present Constitution states, "Graduation from a school of engineering of recognized reputation shall be considered as equivalent to two years' active practice." The question of the constitutionality of allowing such credit in view of the statement in the present constitution was brought up by the Secretary.

It was decided that there is no conflict between the Constitution and the newly adopted definition.

SOCIETY'S REPRESENTATIVE ON CONSULTING COMMITTEE ON LUMBER STANDARDS

It was reported that M. F. Clements, M. Am. Soc. C. E., had been appointed by President Loweth to represent the Society on the Consulting Committee to prepare appropriate data and suggestions for the consideration of the Central Committee on Lumber Standards, to take the place of A. W. Newton, M. Am. Soc. C. E., who had resigned.

A bill from Mr. Clements amounting to \$19.05 was presented, covering his attendance at a meeting of the Committee held in Chicago, Ill., May 14-16, 1923.

On motion, this bill was approved for payment, and the Secretary was instructed to make inquiry of Mr. Clements as to possible future expenses and to ask his opinion as to the value of the work and whether it should be followed up.

AMERICAN ACADEMY OF POLITICAL AND SOCIAL SCIENCE

President Loweth has appointed Messrs. Benjamin Franklin, William Easby, Jr., and Gustave R. Tuska as representatives of the Society to attend the Annual Meeting of the American Academy of Political and Social Science to be held in Philadelphia, Pa., May 11-12, 1923.

UNITED ENGINEERING SOCIETY

Messrs. Robert Ridgway and W. J. Wilgus have been appointed by President Loweth, as authorized, to fill the vacancy caused by the resignations of Messrs. A. P. Davis and John R. Freeman, respectively, as representatives of the Society on the Board of Trustees of United Engineering Society.

DELEGATES APPOINTED TO CEREMONIAL PAGEANT HELD IN WASHINGTON, D. C.,
MAY 18, 1923, DURING THE ANNUAL CONVENTION OF THE
AMERICAN INSTITUTE OF ARCHITECTS

In response to invitation from the American Institute of Architects to this Society to send a delegation to the Ceremonial Pageant to be held in Washington, D. C., on the evening of May 18, 1923, during its Annual Convention, as authorized by this Committee at its last meeting, President Loweth appointed the following: Messrs. William E. Parker, Chairman, O. B. French, Nicholas H. Heck, John C. Hoyt, Arthur N. Johnson, George A. Ricker, Frank C. Starr, G. B. Strickler, and Edwin F. Wendt.

APPOINTMENT OF REPRESENTATIVE AT CEREMONIES IN CELEBRATION OF THE
122D ANNIVERSARY OF THE SOCIÉTÉ D'ENCOURAGEMENT
POUR L'INDUSTRIE NATIONALE IN PARIS

In response to an invitation from the President of the Société d'Encouragement pour l'Industrie Nationale for this Society to be represented at the ceremonies in celebration of the 122d Anniversary of the Society in Paris, June 7-10, 1923, the President has appointed J. L. de Pulligny, M. Am. Soc. C. E., as the Society's representative on this occasion.

WASHINGTON AWARD

In accordance with authority granted by this Committee at its meeting of March 31, 1923, President Loweth has appointed William H. Finley, M. Am. Soc. C. E., as one of the Society's representatives on the Washington Award.

GRADES OF ASPHALT

In response to invitation dated May 7, 1923, from the Division of Simplified Practice of the U. S. Department of Commerce to appoint a representative to be present at the Conference held in Washington, D. C., on May 28, 1923, for the discussions of grades of asphalt, President Loweth appointed R. Keith Compton, M. Am. Soc. C. E., as such representative. It is understood the result of this Conference will be published in Secretary Hoover's "Elimination of Waste" reports issued by the Department of Commerce.

COMMITTEE ON PRIZES

As authorized, President Loweth has appointed Messrs. Edwin F. Wendt, W. W. Curtis and George H. Herrold, as the Committee to Recommend the Award of Medals and Prizes for 1923.

APPOINTMENT OF COMMITTEE ON JOINT CO-OPERATION ON PUBLIC MATTERS

As authorized, President Loweth has appointed the following as a Committee to confer with the officials of other National Engineering Societies with a view to formulating some permanent workable method of joint co-operation on public matters: Messrs. Charles F. Loweth, Chairman, Willard T. Chevalier, Arthur H. Markwart, Leonard Metcalf, and Charles H. Paul.

DULUTH SECTION

The Secretary presented the following letter, recently received from Secretary Zimmerman of the Duluth Section, as a matter of interest:

"To Mr. JOHN H. DUNLAP, *Secretary*,

AMERICAN SOCIETY OF CIVIL ENGINEERS:

"SECRETARIES OF ALL LOCAL SECTIONS OF THE

AMERICAN SOCIETY OF CIVIL ENGINEERS:

"GENTLEMEN.—At the annual meeting of our Section, held May 21st, 1923, at which there were twenty-four members present, presided over by Mr. W. H. Hoyt, President, a report was submitted by a Committee recently appointed by us for the purpose of studying the paper recently sent out by Mr. W. J. Knight of St. Louis, upon the question "Is the American Society of Civil Engineers a Progressive Institution?" After discussion, and on motion, duly made, seconded and carried, the report was adopted with the provision that copies of the same be sent to Secretary Dunlap and to the Secretaries of all Local Sections of the Society. The report is therefore transmitted to you herewith, namely, as follows:

"Your Committee on the paper by Mr. W. J. Knight has carefully considered the eight recommendations which are therein presented for consideration by the Society, and respectfully submit their views upon each of the eight recommendations.

"In reaching the following conclusions, your Committee has been guided largely by the statement of the objects of the Society which constitutes Section 3 of Article 1 of the Constitution. This Section reads as follows:

"The objects of the Society shall be the advancement of the science of Engineering and Architecture in their several branches, the professional improvement of its members, and the encouragement of intercourse between men of practical science, and the establishment of a central point of reference and union for its members.

"No. 1.—We do not believe that the American Society of Civil Engineers should enter upon a general campaign of publicity. It would be considered as selfish propaganda, and as such is not a proper activity for the Society.

"No. 2.—We do not believe that the American Society of Civil Engineers should advocate a policy of encouraging the members to invite newspaper publicity. This field, in our opinion, lies within the domain of the individual, and should be left to his judgment.

"No. 3.—The practice suggested in this recommendation, of publicly announcing visits of officers of the Society, is, we believe, generally followed. Its prominence is largely a matter of news interest. If it is really news, the matter of publicity will take care of itself; if it is not news, no action by the American Society of Civil Engineers will have material effect.

"No. 4.—Co-operation between the American Society of Civil Engineers and other organizations is a Society policy of long standing. The advocacy of the policy is nothing new and comment is unnecessary.

"No. 5.—We believe that it would be inadvisable for the Society to attempt to establish and recommend schedules of minimum charges for services. Such recommendations would be largely ignored.

"No. 6.—We heartily agree with the desirability of finding some means of differentiating, in the public mind, between high-class professional engineers, and others commonly associated with engineering, who we do not believe are entitled to this designation.

"No. 7.—We do not believe it a proper policy for the American Society of Civil Engineers to interfere, or to attempt to interfere in the commercial relations which exist between engineers in the several branches of industry.

"It is very clear to your Committee that the American Society of Civil Engineers should not attempt interference between manufacturing companies and private practitioners. It has many members in both fields, and the procedure proposed would place the Society in a very delicate position.

"No. 8.—We do not believe that the American Society of Civil Engineers should, at this time attempt to edit and distribute a book on ethics and the other items mentioned in this recommendation, for the reason that any effective enforcement would be impracticable.

"Respectfully submitted,

"FRANK HUTCHINSON, *Chairman*,
VICTOR L. FIXEN,
J. R. STACK'

"Very truly yours,

"WALTER G. ZIMMERMANN,
"Secretary."

Adjourned at 6:20 P. M.

ABSTRACT OF MINUTES OF MEETING OF EXECUTIVE COMMITTEE,
JUNE 25, 1923

The Executive Committee met at 7:40 p. m.; President Charles F. Loweth in the chair; John H. Dunlap, Secretary; and present, also, Messrs. Holland, Ridgway, Winsor, and Treasurer Hovey.

The minutes of the meeting of this Committee held on May 28, 1923, were approved.

EMPLOYMENT SERVICE

The report of the Joint Committee appointed to look into the whole question of the Employment Service, was presented to the Board at its April meeting.

The report was referred to the Secretary for conference with the Secretaries of the other Founder Societies and report to the Board at its July meeting, it being understood that the Secretary's report would be reviewed by this Committee.

The following report from the Secretaries of the Four Founder Societies outlining a proposed Co-operative Employment Plan was presented:

"JUNE 15, 1923.

"TO THE GOVERNING BODIES OF THE

A. S. C. E., A. I. M. E., A. S. M. E., AND A. I. E. E.:

"GENTLEMEN:

"Subject: Proposed 'Co-operative Employment Plan' restricted to members and with a limited free service.

"A careful analysis of the various reports previously made on the employment service rendered by the four Societies named above to their members for many years past, combined with a further study of the whole question of employment service, emphasized the desirability of continuing some form of service to the membership of these Societies.

"It is generally recognized, however, that the funds which are available from the treasuries of the four Societies have not been, and are not likely to be, sufficient to establish and conduct an adequate service of National scope.

"*Free Service.*—It is the unanimous opinion of the undersigned that while continuing free service to a limited extent, principally by the publication without charge of announcements of available men in the respective journals of the Societies concerned, in addition to this there should be put into effect a plan looking toward a national employment service that will be partially supported by those who are directly benefited by the service. Each Society through its Secretary and staff will continue, as in the past, to assist members in a confidential and personal manner to new positions giving, obviously without charge, advice as to opportunities known to the Secretary and so far as possible the Secretary, also as formerly, will go further in writing letters of introduction, etc., to assist members to possible openings and conversely in important positions to assist employers. It can however be only to a limited extent as is obvious.

"The excellent report* submitted to the four National Societies of Civil, Mining, Mechanical and Electrical Engineers under date of March 17, 1923, by the joint committee of these four societies which was appointed to study the whole question of employment service, formulated very definitely the problems involved in rendering employment service by professional engineering societies; and it is the purpose of the present report to endeavor to solve these problems by submitting a plan with definite recommendations as to method of organization, financing, and procedure.

* *Proceedings*, Am. Soc. C. E., August, 1923, p. 385.

"It has not been thought desirable that the Societies should withdraw abruptly from the support of the joint bureau, on the one hand, nor that they should continue full support as in the past. It is proposed that jointly the Societies contribute, say, one-half the amount appropriated in the past, and that the balance be obtained from fees from those benefited; in other words a Co-operative Service.

"However, during the introductory period it will be necessary to underwrite the bureau, but according to the estimates it does not seem probable that the bureau will fail to bring in the necessary fifty per cent. of the cost. To provide against possible shrinkage the Societies are asked jointly to underwrite the full amount, but at a basis prorated according to the placements made last year; that is, according to the following table:

| | Placements. | Appropriation requested. | Amount underwritten. |
|------------------|-------------|--------------------------|----------------------|
| A. S. M. E. | 1 150 | \$4 130 | \$8 260 |
| A. S. C. E. | 505 | 1 815 | 3 630 |
| A. I. E. E. | 450 | 1 635 | 3 270 |
| A. I. M. E. | 120 | 420 | 840 |
| Total | | \$8 000 | \$16 000 |

"*Co-operative Service.*—We recommend that the present arrangement be continued until September, and that commencing on September first a 'maintenance charge' be made to all those who obtain positions through the efforts of the Employment Service, on a basis mentioned below, and which it is estimated will eventually provide for employing and developing a personnel adequate to render satisfactory service, with proper investigation of all positions available and a careful individual handling of all applicants for positions. The staff should include eventually competent investigators who, as soon as information is received regarding a vacancy, should visit the prospective employer and obtain complete data regarding the requirements of the position. The Service would then be in a position intelligently to select the proper candidates. These investigators should also be used to inquire into the qualifications of all those who register for positions, either by personal calls on the last one or two employers of the applicant, or otherwise—not for the purpose of checking up the character of the applicants, as the service we recommend is to be limited to members of the four societies only—but for the purpose of completing the analysis of the applicant's training and experience, and thereby improving the judgment of the Employment Management in selecting 'the right man for the job'. A further development would be to have these investigators keep in personal contact with the larger employers of engineering talent, and through personal calls develop new channels for service, also as occasion offers, to develop new opportunities for the engineering profession in positions now held by non-engineers.

"We wish to emphasize here that the problems confronting the employment service to be rendered by these professional societies are peculiar to themselves, and cannot be solved by methods which may have proven advantageous to commercial agencies; neither would the practices employed in personnel departments of the larger industries be acceptable to the average member of any of these societies. What the member requires when he is seeking a position is special sympathetic and confidential consideration, and painstaking investigation of the requirements of the position, followed by intelligent selection of two or three qualified candidates.

"In order to give the greatest satisfaction, it must be possible to pay a great deal more attention in the future to developing methods of obtaining knowledge of opportunities for engineers through the services of investigators as referred to above and otherwise. In the past it has not been possible,

because of lack of funds, to do nearly as much in this direction as should be done. It is, of course, not possible for an employment service to create positions, and in times of industrial depression there will always be many more available men than positions; but even during the severe depression beginning about two years ago, active work by members of volunteer committees of unemployed engineers resulted in a large number of positions being found.

"Therefore, without repeating the details relating to the history of the service previously rendered, or the conditions to be met, all of which are adequately covered by the report of the Joint Committee referred to above, we recommend the adoption of the following:

**"PLAN FOR EMPLOYMENT SERVICE FOR THE MEMBERS OF THE
A. S. C. E., A. I. M. E., A. S. M. E., AND A. I. E. E.**

"(1) That the four Societies continue their support of employment service for their membership, to be conducted as heretofore under the supervision of an executive board made up of the four Secretaries thereof.

"(2) The publication of notices of men available to be continued in the Societies' journals without charge to members, thus providing for a continuance of free service to members.

"(3) That beginning September 1, 1923, a 'maintenance charge' be made to all those who obtain positions through the Employment Service, on the following basis for the first year, with such adjustments later as may be deemed necessary: \$10 for all positions paying a salary of \$2 000 per annum or less; \$10 plus 1 per cent. of all salary in excess of \$2 000; temporary positions, one month or less, 3 per cent. of amount of salary received and no refund of *Bulletin* subscription.

"Thus, for example, the fee for a \$2 000 position would be \$10; the fee for a \$2 500 position would be \$15; the fee for a \$5 000 position would be \$40. (The average of salaries paid for positions filled through the Employment Bureau during the last ten months has been over \$3 000, and approximately 2 500 positions have been filled during the past year.) Based on conservative figures, the estimated income for twelve months would be $1\,500 \times \$20 = \$30\,000$.

"(4) That registration of available men be restricted to members of the four Societies named above, at least until the plan has proved to be entirely satisfactory and financially sound. (Later, the question of extending the Service to members of all organizations exchanging courtesies with these four societies could be considered, including State, county, or local engineering organizations with which any of the Local Sections of the four National Societies are affiliated; to members of the Student engineering organizations affiliated with these four Societies.

"(5) That beginning with the inauguration of the paid Service, the publication of 'Positions Available' in the Societies' journals be discontinued. In its stead there should be substituted an employment bulletin, which will be sent out at suitable intervals only to those who are regularly registered as available. (It is estimated that about one-third of the present 3 600 on the registration list would be desirous of having their names continued thereon, and would be agreeable to paying a registration maintenance fee on the following basis: three months, \$3; one year \$10; thus making a fund of approximately \$3 600 available every three months for the purpose of publishing the bulletin. This should be sufficient to support a weekly issue distributed under first-class postage. Positions would be listed with a key, and credit would be made on the 'maintenance charge' of the amount paid for the current quarter of the employment bulletin, or for advance quarters.)

"(6) That whatever surplus remains at the end of the first year from the income from fees and the amount appropriated by the Societies, be utilized for the extension of the Service to other cities; this plan to be

continued from year to year until the Service is developed to a truly National basis; if necessary the 'maintenance fees' to be increased sufficiently to provide funds for this widening of the scope of the activity—as the narrowness of the present Service is its chief weakness. (Whereas in the larger cities the work might require not only the entire time of one man, but also of some assistants, in smaller cities it will probably be possible to arrange with local engineering organizations to divide the time of one man between the Employment Service and the secretaryship of a local society.)

"(7) That the four Societies agree to underwrite this Service for one year, on the basis of the cost of maintaining the present Service for the past year, apportioned according to the number of members of each society who obtained positions during the last year and actually appropriate fifty per cent. of the amount underwritten; the appropriation to be made available for use at any time during the year.

"The undersigned are hopeful that all four governing bodies of the National Societies concerned will give prompt approval to these recommendations, in order that the plan may be promptly announced in our publications and put into effect on September first.

"In conclusion, we call attention to the fact that the Joint Committee whose report was recently submitted was advised by legal counsel that a paid Service limited to the members of the Societies only, such as recommended herein, could be inaugurated without involving the question of taxation, and without requiring compliance with the laws relating to employment agencies. However, even if this should not prove to be the case, our recommendations still stand, as the amount involved for taxation of the office space to be utilized and the employment licensing fees would not be sufficient to jeopardize our proposed plan.

"Respectfully submitted

"JOHN H. DUNLAP, *Secretary, A. S. C. E.,*

"F. F. SHARPLESS, *Secretary, A. I. M. E.,*

"CALVIN W. RICE, *Secretary, A. S. M. E.,*

"F. L. HUTCHINSON, *Secretary, A. I. E. E."*

Comments received from Local Sections since the last Board meeting concerning the Employment Service were presented, together with the action of the American Institute of Mining and Metallurgical Engineers approving in principle the plan of a Co-operative Employment Service.

No action was taken, it being understood that each member of the Committee would try and familiarize himself with this matter before the next Board meeting.

SUGGESTION THAT THE SOCIETY PROTEST DISMISSAL OF PAST-PRESIDENT DAVIS AS DIRECTOR OF U. S. RECLAMATION SERVICE

It was reported that the following telegram signed by Messrs. Joseph Jacobs, J. C. Stevens, and R. K. Tiffany, had been received on June 21, 1923:

"It is suggested that the summary and ruthless dismissal of an Engineer of the character and standing of Past-President Davis who has rendered so long and conspicuous a public service calls for inquiry and protest of the Society."

This matter was discussed at length. The Secretary was directed to write the members signing the foregoing telegram, acknowledging it, and expressing appreciation for their interest and stating that the matter is having consideration and will be investigated and that the Society will be glad to receive any information they can obtain.

On motion, it was further decided to write to certain Western members for the opinion in their locality in this matter, as well as to address letters

of inquiry to the Secretary of the Interior and Past-President Davis for presentation to the next Board meeting; also the appointment of a Committee was authorized to investigate the facts and report to the Board at its next meeting. And necessary traveling expenses are appropriated for the Committee.

DATES OF FUTURE INTERMEDIATE MEETINGS OF THE BOARD OF DIRECTION

The Board at its meeting of January 18, 1923, referred to the Executive Committee with power, the fixing of dates for intermediate Board Meetings after the month of May.

The following dates were tentatively fixed, subject to change by the President, if necessary: Mondays, September 10, and November 26, 1923, at 7 P. M. at Society Headquarters.

Adjourned at 11:10 P. M.

COMMITTEE OF TECHNICAL ACTIVITIES AND PUBLICATIONS

The Chairman of the Committee on Technical Activities and Publications moved the adoption of the following, which, on motion, was carried:

"The Committee on Technical Activities and Publications has considered the question of the publication of the report of the Associated General Contractors on 'The Seasonal Demand of Construction for Labor, Materials and Transportation'. Because of the wide distribution in print of this report, and because no committee of the Society has reviewed or made recommendations on the report, and its publication might be construed as a tacit endorsement of the recommendations therein contained, your Committee is of the opinion that it should not be published by the Society.

"The Committee is further of the opinion that it might be well to suggest to each Local Section that a meeting be held to discuss 'Waste in the Building Industry' and that they could use as a basis for this discussion, the report of the Associated General Contractors on 'The Seasonal Demand of Construction for Labor, Materials and Transportation', with the emphatic statement to each Section that in making the suggestion it should be understood that the Society is not committed either for or against any of the recommendations contained in this report; and that the Sections report their views on this matter, together with desirability of the formation of a Construction Division in the Society, to the Committee on Technical Activities and Publications."

COMMITTEE ON BUST OF CAPTAIN EADS

The following letter dated July 6, 1923, from Chairman Wall, of the Committee on the Bust of Captain Eads, was presented:

"MR. JOHN H. DUNLAP
Secretary, AM. SOC. C. E.,
Hotel Drake,
Chicago, Illinois

"DEAR SIR.—I have learned that Mr. George S. Davison, a member of the Committee on the Bust of Captain Eads and also a member of the Board of Direction, is not likely to be present at the meeting of the Board to be held in Chicago on July 9th, at which time you informed me a report is scheduled from the Committee on the Eads Bust.

"I am therefore writing you to say to the Board for the Committee that the funds in hand together with subscriptions guaranteed are sufficient to

pay the estimated cost of the bust complete and also the incidental expenses which will be assessed against us for the cost of the unveiling ceremonies.

"I have had considerable correspondence with Mr. Charles Grafty, the sculptor, who has the contract for making the bust, and have been trying to obtain for him some authentic portraits from the surviving relatives of Captain Eads.

"The contract calls for the completion of the bust by April 1st, 1924, so that we hope to have this bust ready and in place for the annual unveiling ceremonies, which are usually held in the Hall of Fame about May 1st.

"The only other duties remaining for this Committee to perform are to see that the balance of the subscriptions are duly paid in and that the bust, when ready for inspection by the Art Committee of the Hall of Fame, is approved by them. It is not likely that this Committee will have anything to report to the Board before the annual meeting in January.

"Yours very truly,

EDWARD E. WALL,

"Chairman, Committee on Eads Memorial Fund".

President Loweth announced that this letter would be received as a report of progress from the Committee.

BENEVOLENT FUND

The Board of Direction at its meeting of October 2, 1922, ordered the report of the Committee to investigate and report in regard to the desirability of creating a Benevolent Fund, published in *Proceedings*, with the argument against by Director Chester, and the Local Sections were asked for their views.*

The following is a résumé of the replies received:

| Section. | Date of meeting. | No. Present | Action. |
|------------------|---------------------|-------------|---|
| Atlanta | May 7, 1923 | 22 | { Motion in favor of fund by voluntary contribution lost by tie vote. |
| Cleveland | Jan. 10, 1923 | 18 | |
| Dayton. | Letter July 5, 1923 | Committee | { Unanimous vote opposed. Emphatic opinion that it should be adopted. |
| Detroit | Jan. 26, 1923 | 30 | |
| Duluth | Feb. 19, 1923 | 29 | { Section opposed to creation of Fund. Opposed. |
| Kansas City ... | Dec. 12, 1922 | 14 | |
| Los Angeles | Jan. 10, 1923 | 61 | { Fund not needed, but Section does not object, if Society's funds are not used for maintenance. Section heartily approves. |
| Nebraska | Jan. 13, 1923 | 14 | |
| New York..... | April 18, 1923 | 190 | { Section endorses report of Board as per motion carried at previous meeting (minutes not available). Approved. |
| Northeastern ... | Letter Ballot | 73 | |
| Northwestern ... | May 12, 1923 | 17 | { Approved. 10 for, 45 opposed. Voting 54 against, 18 for, 1 not marked. |
| Philadelphia ... | Letter Ballot | 55 | |

* *Proceedings*, Am. Soc. C. E., December, 1922, p. 662.

| Section. | Date of meeting. | No. Present. | Action. |
|---|-------------------|-------------------------------|---|
| Pittsburgh | | .. | { Director Chester reported at July 9, 1923, Board Meeting that Pittsburgh Section was opposed. |
| Providence | | .. | |
| Sacramento | Jan. 26, 1923 | (?) | { Report of Committee adopted, approving Fund, with suggestions for administering. |
| San Diego | Mar. 27, 1923 | 10 | |
| San Francisco .. | Feb. 20, 1923 | { 89 including guests } | { Welfare Committee of the Section reported disapproving of the creation of such a Fund. |
| St. Louis | Jan. 29, 1923 | 89 | |
| Texas | April 13-14, 1923 | (?) | { Endorsed in principle. Approved. |
| Individual opinions: W. C. Briggs, Hartsdale, N. Y. Opposed—gives reasons. | | | |
| S. Whinery, New York City Opposed—gives reasons. | | | |

| | In favor | Opposed |
|---------------------------------------|----------|---------|
| Summary of Replies from Sections..... | 9 | 8 |

REPORT OF COMMITTEE ON BENEVOLENT FUND

The following report was presented from Chairman Anderson:

"TO THE BOARD OF DIRECTORS,
AMERICAN SOCIETY OF CIVIL ENGINEERS.

"GENTLEMEN.—In making a brief progress report on the 'Benevolent Fund', it is proper for me to state that it is individual, as for various reasons, I have had no opportunity to confer with any associates on the Committee. The comments I shall make are based entirely on the information supplied by Secretary Dunlap, which is before each of you in the synopsis of business.

"There are reports from 15 out of 42 Local Sections, 5 only having reported since the April meeting. The Utah Section took favorable action in April, (I was present at the meeting), but has not made report. I was advised that the Colorado Section would take action at its June meeting.

"Of the Sections reporting, 597 members were present when action was taken and two Sections which approved did not report the numbers present.

"Of these 597 members, 366 reported in favor of the Fund and 231 against.

"Of the 15 Sections reporting, 8 approve, 5 oppose, 1 was evenly divided, and 1 reported as 'not objecting, if the funds of the Society were not drawn upon'.

"It is the personal conclusion that this expression of opinion is not sufficient to warrant the Board taking the decisive action of recommending that the Fund should be established. Nor does it seem probable that any extension of time during which the Sections may voice their opinion will elicit additional advices. The matter has now been before them since December last—ample time for consideration.

"Reluctant as I am to abandon a worthy movement, it is obvious that the membership at large is apathetic, and would probably continue so when subscriptions came to be solicited.

"I would, therefore, now repeat the suggestion made at the April meeting, that the plan be abandoned, and the Committee be discharged.

"Yours respectfully,

"GEORGE G. ANDERSON, *Chairman.*"

On motion, this report was adopted, and the Committee was discharged with thanks.

COMMITTEE ON RESEARCH

The Committee on Research has been asked to report on the following:

(1) Estimate of the amount of money needed to carry on the proposed research work of the Committee on Concrete and Reinforced Concrete Arches on which a presentation may be made to Engineering Foundation for the solicitation of adequate funds for that Committee.

(2) Whether the subject of articles manufactured from wood, such as trusses and boxes, should be taken up by a research committee of the American Society of Civil Engineers either by itself or in conjunction with another Society.

(3) Appointment of Special Committee on Cement suggested by Benjamin A. Howes, M. Am. Soc. C. E.

The Chairman of the Committee on Research reported progress and asked for the views of those present concerning the third item.

PUBLIC RELATIONS COMMITTEE

The following report from the Chairman of the Public Relations Committee was read by the Secretary:

"JUNE 29, 1923.

"BOARD OF DIRECTION,

AMERICAN SOCIETY OF CIVIL ENGINEERS.

"GENTLEMEN.—Under date of April 16, 1923, Secretary Dunlap submitted to the Committee on Public Relations, for consideration, letter of Mr. N. R. McLure, dated April 12th, 1923, suggesting how the Society could be of service in the dissemination of sound economic theory.

"While the Committee recognizes the soundness of the economic principles outlined in the letter, we do not think it is the function of the American Society of Civil Engineers to undertake this work. Furthermore, the Society has much more urgent need for its funds in other directions, which will give far greater return to engineers and indirectly to the country at large. Consequently, the Committee recommends that the Society take no action on the subject suggested by Mr. McLure.

"Respectfully submitted,

"Committee on Public Relations,

"BAXTER L. BROWN, *Chairman.*"

On motion, the foregoing report was received and the recommendation contained therein approved.

TELEGRAMS TO DIRECTORS ABSENT ON ACCOUNT OF ILLNESS AND OF

CONGRATULATION TO PAST-PRESIDENT MARX

In response to a telegram received from Vice-President Davison who explained that his absence was due to a recent operation it was decided to send telegrams expressing the best wishes of the Board both to him and to Director Anderson who was prevented from attending the meeting on account of illness.

It was reported that Past-President Marx had been retired as Dean of the College of Civil Engineering at Stanford University, and, on motion, a telegram was sent to him expressing the best wishes of the Board on this occasion and appreciation of his work.

Subsequently, the wire received from Past-President Marx in response to the foregoing was read to the Board.

COMMITTEE ON MECHANICAL RATING OF APPLICATIONS

The following report from the Committee on Mechanical Rating of Applications was presented, together with letter dated June 21, 1923, from Director Chester who is a member of this Committee:

"BOARD OF DIRECTION

AMERICAN SOCIETY OF CIVIL ENGINEERS

33 West 39th St.

New York City.

"GENTLEMEN.—Your Committee, appointed to report on the feasibility of a so-called mechanical scheme for classifying applicants for membership in the Society, submits the following for your consideration:

"At our request the Secretary took up this matter with the Secretaries of the three other Founder Societies and the Engineering Institute of Canada, with the following summarized results:

"*Mining Engineers*: 'Doubts if our requirements would lend themselves to anything automatic.'

"*Mechanical Engineers*: 'Has never been suggested before but thinks it might be a good thing.'

"*Electrical Engineers*: 'Have never been able to devise any mechanical method of making this decision.'

"*Engineering Institute of Canada*: 'Have done nothing in the way of attempting to rate applicants for admission mechanically.'

"After careful study of the report submitted by the previous Committee, as well as the report submitted from the standpoint of the Secretary's office, it is our opinion that it is not practicable to grade the applicant on any fixed standard numerically, for the reason that unusual instances would introduce errors that would seriously discredit the reliability of the method. On the other hand, there are certain fixed qualifications for membership in the several grades which could be summarized in the Secretary's office and indicated in total in addition to the details as at present published.

"For instance, in order to qualify for 'Membership' an applicant must be thirty years of age, he must have had ten years' actual practice and five years' of responsible charge of work and must be qualified to design as well as to direct work. If the statements of the applicant meet these conditions the Secretary's office could then indicate that fact. In the same way, the applicant for 'Associate membership' must be twenty-five years of age, must have had six years' actual practice and one year of responsible charge of work. It is the opinion of your Committee that if the Secretary would indicate in this manner the highest grade of membership to which the applicant is entitled, on the assumption that all of the facts as stated by the applicant are correct, it would save the members of the Board considerable time in checking up on these matters. At the same time it would in no way limit the action of the members of the Board.

"GEO. H. FENKELL

"Detroit, June 5, 1923.

"GEO. C. MASON, *Chairman*."

"Union Bank Bldg.
Pittsburgh, Pa.
June 21, 1923.

"MR. GEO. C. MASON
925 Gasco Bldg.
Portland, Oregon

"DEAR SIR.—Replying to yours of May 24th and June 15th concerning the tentative draft of the report of our Committee on the feasibility of a so-called mechanical scheme for classifying applicants for membership to the Society, my failure to earlier reply is due to two reasons—continued absence from my office, and, second, indecision—but now as to my criticism, for the year and a half I have been on the Board this matter has been frequently discussed and several attempts made to adopt some scheme and, as you know, there have been two Committees. The first was known as the Alvord Committee and the second the Wall Committee. They did a great deal of work, and both Committees were of the opinion that something could be done, and made some definite recommendations, a few of which met with the approval of the majority of the Board. Personally, I have always been pessimistic but confess near conversion to some mechanical methods, had not expected to be appointed on this Committee, and deplore having to act from the fact of my long indecision as a result of past study.

"My conclusion, therefore, is that I do not agree with the opinion you express that it is not practical to grade the applicant on any fixed standard numerically for I have come to the conclusion that some numerical grading is possible.

"I agree with your last conclusion, to-wit:

"It is the opinion of your committee that if the Secretary would indicate in this manner the highest grade of membership to which the applicant is entitled, on the assumption that all of the facts as stated by the applicant are correct, it would save the members of the Board considerable time in checking up on these matters. At the same time it would in no way limit the action of the members of the Board." * * *

"Yours very truly,

"(Signed) J. N. CHESTER."

After a thorough discussion, it was decided to accept the foregoing as a report of progress and the matter was referred back to the Committee for further consideration.

It was reported that a meeting of the Committee on Co-operation would be held in Chicago, July 13-14, 1923, and that authority would have to be granted to allow mileage for such meeting from the Committee's appropriation, as the rule is not to allow mileage for Committee meetings held at the same time and place as a meeting of the Society, unless specially authorized.

On motion, payment of such mileage was authorized.

MEMBERSHIP BALLOTS

Membership ballots were canvassed resulting in the election of 18 Members, 38 Associate Members, 2 Affiliates, and 22 Juniors, and the transfer of 15 Associate Members to the grade of Member and of 5 Juniors to the grade of Associate Member.

Recess was taken at 12:40 P. M., for luncheon.

The Board reconvened at 2:20 P. M., with the same attendance as in the forenoon.

COMMITTEE ON STUDENT CHAPTERS

Chairman Marston, of the Committee on Student Chapters, reported that his Committee recommends that the applications be approved for the formation of Student Chapters at the University of Alabama, Marquette University, and the Clarkson College of Technology; and that more time be granted to his Committee for the consideration of the application for the formation of a Student Chapter at Rice Institute.

After discussion, each recommendation of the Committee was voted on separately and carried.

PROPOSED AMENDMENT TO ARTICLE V OF THE BY-LAWS

The Committee on Student Chapters had been asked to report on a letter received from Professor Tracy, of Yale University, questioning whether Engineering Graduates might be admitted to the Society on payment of initiation fee and that payment of annual dues be deferred until a later date.

After discussion, it was decided to draft an amendment to the By-Laws covering the matter.

Accordingly, at the morning session of July 10, 1923, notice was given of the following proposed amendment to the By-Laws, which will come up for final action at the next meeting of the Board: Amend Article V, Section 7, by adding,

"(h) Graduates recommended by the heads of the Civil Engineering Departments of their respective Engineering Colleges, may upon payment of \$4.50 continue affiliation with their Student Chapters until the January 1st, second following graduation. During this period they shall receive the *Proceedings* and shall have the privilege of membership in any Local Section in the territory of which they may locate."

COMMITTEE ON LOCAL SECTIONS

It was reported that the Committee on Local Sections had under advisement the following:

(1).—The Secretary's plan for comprehensive sub-committees of the Committee on Technical Activities and Publications.

(2).—The Secretary's report on Activities on Local Sections.

(3).—The Secretary's suggestion that informal conferences of delegates of Local Sections be held at the time of general Society meetings.

(4).—Desirability of publication of bulletins by Local Sections.

(5).—Requests for allotment of \$3 per member from the Northwestern, San Francisco, and New York Sections.

(6).—Question of allowing allotments to Sections formed during 1923.

(7).—Letter dated October 16, 1922, from the President of the Connecticut Section concerning the proper scope for Section activities and their relation to those of the Society.

(8).—Letter dated September 23, 1922, from the President and Secretary of the Illinois Section enclosing proposed amendments to its Constitution on which they would like to have the expression of the Board.

(9).—Extract from the minutes of the Annual Meeting of the Detroit Section held September 30, 1922, requesting the assignment of members within a certain territory to that Section.

(10).—Resolution adopted by the Texas Section that each member of the Society be allocated to his proper Local Section.

(11).—Question raised by Secretary Banks, of the Northeastern Section, as to whether a member of the Society exempt from the payment of dues under the Constitutional provision is exempt also from the payment of dues to Local Sections.

(12).—Question of proper action to take in allotment of dues when members belong to one, two, and, in some cases, three Local Sections.

The Chairman of the Committee reported progress on the foregoing items, reporting specifically on Items Nos. 3, 5, 11, and 12, as follows:

(3).—That arrangements have been made to have informal conferences of delegates of Local Sections at the time of general Society meetings, and that one is scheduled to be held during the Annual Convention in Chicago, Ill.

(5).—That as the budget for 1923 has been fixed allowing allotment of \$2 per member to Local Sections, it would not be desirable to increase the allotment at this time; and that the Committee will report at the next Board meeting, which will be in ample time for the budget for next year.

(11).—That if members are exempt from payment of dues in the Society, they should be exempt from payment of dues in Local Sections, but that, in such case, no allotment is made by the Society to the Section for such members. All Local Sections are to be informed of this action and asked to govern themselves accordingly.

(12).—When a member belongs to more than one Local Section the allotment is made to the Section in which he resides.

On motion, the report of this Committee was adopted.

ADOPTION OF AMENDMENT TO ARTICLE IV, SECTION 2, OF THE BY-LAWS

Notice of the following proposed amendment to the By-Laws having been reported to the Board at its meeting of April 16, 1923, this amendment was presented for final action and, on motion, was carried unanimously:

Add the following new paragraph to Article IV, Section 2:

"In the interim between January 1, and the adoption by the Board of Direction of the Budget for the ensuing year the Executive Committee shall have authority to make appropriations for the payment of routine bills."

ADOPTION OF AMENDMENT TO ARTICLE IV, SECTIONS 1, 5, AND 7 OF THE BY-LAWS

Notice of the following proposed amendments to the By-Laws having been reported to the Board at its meeting of April 16, 1923, these amendments were presented for final action, and, on motion, were carried unanimously:

Amend Article IV, Section 1, 7th line, by omitting the sentence, "A Committee on Special Committees"; also omit Section 5 of this Article as follows:

"The Committee on Special Committees shall consist of three members of the Board of Direction and shall oversee, on behalf of the Board of Direction, all the work of special committees, and pass upon and approve all

expenditures of such special committees, and shall from time to time make a recommendation to the Board of Direction concerning the progress of the work of such special committees with recommendation for further work or modification of or cessation of work of such special committees."

Change the second paragraph of present Section 7 of Article IV by omitting the words "procedure and"; by changing the words "permanent Committee on Special Committees" to "Executive Committee"; by omitting the words "with overseeing"; and by substituting for the clause following the comma after the word, "Board", the following: "both with the approval of all such expenditures and with the supervision of all Special Committees other than those placed by the Board within the jurisdiction of the Standing Committee on Research"; making the paragraph read:

"Government.—All special committees shall report on all matters relating to expenditures to the Executive Committee of the Board of Direction, which Committee is charged, on behalf of the Board, both with the approval of all such expenditures and with the supervision of all Special Committees other than those placed by the Board within the jurisdiction of the Standing Committee on Research."

ADOPTION OF AMENDMENT TO ARTICLE IV, SECTION 1

Notice of the following proposed amendment to the By-Laws having been reported to the Board at its meeting of April 16, 1923, this amendment was presented for final action, and on motion, was carried unanimously:

Amend Article IV, Section 1, by adding to the list of Standing Committees the words "A Committee on Research"; and by adding a new section to take the place of Section 5 on the Committee on Special Committees, as follows:

"5.—The Committee on Research shall consist of not more than nine members, at least one being a member of the Board of Direction. Its duties shall be to organize, stimulate and supervise the research work of the Society as conducted by its committees or through co-operation with societies and individuals, in accordance with the directions and regulations of the Board."

PROPOSED AMENDMENT TO ARTICLE VII OF THE BY-LAWS

The Secretary reported that as progress is made in connection with the formation of Technical Divisions of the Society, the need becomes apparent for a Constitution and By-Laws for each Division. Accordingly, Director Winsor gave notice of the following proposed amendment to Article VII of the By-Laws providing for such Constitution and By-Laws of Technical Divisions, which will come up for final action at the next meeting of the Board:

Add at the end of Section 1, Article VII, of the By-Laws: "The organization of a Division shall become effective as soon as its Constitution and By-Laws shall have been submitted to, and approved by, the Board of Direction." Change the first sentence of Section 2 to read: "Members of the Society of any grade may become members of the Division in the same grade by enrollment".

PROTEST AGAINST THE DISMISSAL OF PAST-PRESIDENT DAVIS AS DIRECTOR OF THE U. S. RECLAMATION SERVICE

The summary dismissal of Past-President Davis as Director of the U. S. Reclamation Service, was considered by the Executive Committee at its

meeting of June 25, 1923, and it was decided to write to the Secretary of the Interior, and to Past-President Davis, letters requesting statements in this matter for presentation to this Board meeting. The President was also authorized to appoint a committee (which consists of John F. Stevens, Hon. M. Am. Soc. C. E., and George S. Webster, Past-President, Am. Soc. C. E.) to investigate the facts and report to the Board, and an effort has been made to secure an expression of opinion from members in various parts of the country.

On request, the Secretary read his letter to Secretary Work, of the Department of the Interior, and the acknowledgment received from Administrative Assistant Burlew; also communication from Director Mason, the Portland Section, Secretary Wallace, of the Federated American Engineering Societies, Messrs. J. B. Lippincott, George F. Swain, H. S. Crocker, S. H. Hedges, J. C. Ralston, and a newspaper clipping from the *Idaho Statesman*.

After discussion, and on motion, the action of the President and Executive Committee in this matter was approved unanimously.

On further motion, duly seconded and carried unanimously, the President appointed a committee composed of Messrs. McConnell, Freeman and Grunsky, which prepared a resolution* to be presented to the Society with an accompanying memorandum giving the essential reasons why the Board took the action it did.

It was moved, and carried unanimously that this resolution be submitted for the information of the Annual Convention with an explanatory statement. On motion, authority was given to the Secretary to give the resolution and the statement to the press.

On motion, it was decided that a copy of this resolution be sent to the other National Societies with the suggestion that they take similar action in investigating this matter.

CALIFORNIA INSTITUTE OF TECHNOLOGY SENDS GREETINGS

For the record, it was reported that under date of April 26, 1923, Professor Franklin Thomas, Assoc. M. Am. Soc. C. E., of the California Institute of Technology, extends the greetings of the Institute and hopes that it may be able to contribute to the interest and enjoyment of the membership during the 1924 Annual Convention of the Society to be held in Pasadena.

RESOLUTIONS ADOPTED IN CONNECTION WITH THE DEATH OF RUDOLPH HERING

On motion, the President was authorized to appoint a Committee of three to draw up appropriate resolutions in connection with the recent death of Rudolph Hering, M. Am. Soc. C. E., who served as Director of the Society in 1891 and from 1897 to 1899; and as Vice-President from 1900 to 1901.

The President appointed as such Committee, Messrs. Chester, Winsor, and Talbot. The report of this Committee was as follows:

"Whereas, Death has removed from the ranks of the American Society of Civil Engineers one of its most honored members, a past Director and Vice-

* *Proceedings, Am. Soc. C. E., August, 1923, p. 338.*

President, Rudolph Hering, one of the foremost pioneers in the field of Sanitary Engineering, who contributed largely to the development of the science of sanitary engineering in this country and to the elevation of this as a branch of Civil Engineering.

"Therefore, Be It Resolved, That in the demise of Mr. Hering the Society has lost one of its most able members and the profession a most prominent worker.

"Be It Further Resolved, That a copy of this resolution be spread upon the Minutes of the Board of Direction of the American Society of Civil Engineers and a copy forwarded to the family of the deceased."

On motion, duly seconded and carried unanimously, these resolutions were adopted.

MILEAGE ALLOWANCE FOR SECRETARIES OF TECHNICAL DIVISIONS

It was reported that the Committee on Technical Activities and Publications recommends that the Board allow the payment of mileage to the Secretary of a Technical Division of the Society from its funds for attendance at a Society meeting at which the Division has a program.

On motion, this recommendation was adopted.

CITY PLANNING DIVISION

It was reported that under date of June 28, 1923, Nelson P. Lewis, M. Am. Soc. C. E., forwarded a petition addressed to the Board and signed by twenty members, requesting authorization for the organization of a City Planning Division. A petition has also been received from Charles B. Ball, M. Am. Soc. C. E., with twenty-four signatures.

On motion, the organization of a City Planning Division of the Society was authorized.

LOCAL COMMITTEES ON MEMBERSHIP

The Secretary reported progress in the matter of the action taken by the Board at its meeting of April 16, 1923, authorizing the appointment of Local Committees on Membership, this being part of the report adopted covering the new method of handling applications, and that under date of May 18, 1923, each Director was circularized for suggestions for a plan for the Membership Committee in his District for approval by the Executive Committee.

After discussion, authority was granted to put the plan into effect as fast as the Director of the District makes the nominations.

Recess was taken at 5:50 P. M., for dinner, to reconvene July 10, 1923, at 9:30 A. M.

July 10, 1923.—The Board reconvened at the Drake Hotel, Chicago, Ill., at 9:50 A. M.; President Charles F. Loweth in the chair; John H. Dunlap, Secretary; and present, also, Messrs. Brown, Chester, Condron, Darrow, Davis, Dyer, Fenkell, Freeman, Grunsky, Hogan, Holland, Huber, Humphrey, McConnell, Marston, Ridgway, Talbot, Whitman, and Winsor.

COMMITTEE ON RE-ARRANGEMENT OF THE 15TH FLOOR

The Chairman of the Committee of the Board on Re-arrangement of the 15th Floor, which has been retained in an advisory capacity to the Executive

Committee in this matter, made a report of progress, explaining the need for further expenditures to complete the work authorized.

After discussion, the Executive Committee was authorized to make additional expenditures in this matter up to \$3 500.

On motion, duly seconded and carried, the Executive Committee was authorized to make provision in the budget for the expenditures connected with the work.

COMMITTEE ON REGISTRATION OF ENGINEERS

The Chairman of the Committee on Registration of Engineers reported progress, distributed printed copies of "Report of the Committee on Registration of Engineers of the Board of Direction of the American Society of Civil Engineers", and asked for more time in which to complete the model law which the Board requested his Committee to draft.

Director Brown, of the Committee, spoke against the registration of engineers, and offered the following:

"That the registration or licensing of Engineers is unnecessary; it is not a National question but local. Therefore, this Board recommends to Local Sections and individual members that they take such action on the subject in their State as they may elect."

After discussion, the following motion was offered and carried that "The Committee's report be received as information and the Committee is instructed to submit its definite recommendations, including a draft of a law, at least thirty days before the October meeting of the Board."

Director Condron was added to the Committee.

EMPLOYMENT SERVICE

The report of the Joint Committee on Employment Service was presented to the Board at its April meeting (Messrs. Edgar S. Nethercut and J. P. H. Perry being the representatives of this Society on such Joint Committee). The action taken was to appropriate \$800 for this Service up to August 1, 1923, and the Secretary was instructed, and has officially notified the other Founder Societies that this Society does not bind itself to continue such service after August 1, 1923. Further, the report of the Joint Committee was referred to the Secretary for conference with the Secretaries of the other Founder Societies and report to this Board meeting, it being understood that the Secretaries' report would be reviewed by the Executive Committee. The report* of the Secretaries of the Founder Societies was presented to the Executive Committee at its meeting of June 25, 1923, but no action was taken.

After discussion, a motion was offered as follows:

"That the present service be discontinued September 1, 1923; that the Secretary be authorized to put into operation in conjunction with the other Secretaries the plan outlined in this report, and that the sum of \$955 be provided therefor for the balance of the year."

It is the understanding that this action is contingent on similar favorable action by all of the Founder Societies.

* See p. 500.

This motion was carried by an "aye" and "no" vote, it being understood that the Secretaries' plan is adopted in all particulars, including underwriting as suggested.

The President announced that the Secretary would be expected to report at the next meeting how the new organization is functioning and the opinion of those who are conversant with it as to its future, in order that the Board may determine whether to continue its support after this year.

Recess was taken at 1:00 P. M., for luncheon.

The Board reconvened at 2:30 P. M., with the same attendance as in the forenoon, except that Director Holland was absent.

DESIRABILITY OF SECURING A COMMISSIONED STATUS FOR SANITARY ENGINEERS

A letter was presented, dated June 26, 1923, from Secretary Wallace of the Federated American Engineering Societies, explaining that as the Sanitary Engineers of the U. S. Public Health Service do not enjoy a commissioned status, they are handicapped in their work in many ways, and expressing his hope that the Sanitary Engineering Division of the Society will become interested in this matter.

On motion, this matter was referred to the Sanitary Engineering Division of the Society for report to this Board at its next meeting.

INVITATION FROM SOCIETY FOR THE PROMOTION OF ENGINEERING EDUCATION TO APPOINT TWO MEMBERS AS COUNSELORS TO CONFER WITH ITS BOARD OF INVESTIGATION AND CO-ORDINATION

A letter was presented, dated June 25, 1923, from President Scott of the Society for the Promotion of Engineering Education, transmitting an invitation to this Society to appoint two of its members as Counselors to confer from time to time with the Board of Investigation and Co-ordination of the Society for the Promotion of Engineering Education. It is explained that the Society for the Promotion of Engineering Education is inaugurating an extended and intensive study of engineering education, and that to supervise and direct this study and to co-ordinate results, the Society has created its Board of Investigation and Co-ordination. The invitation is extended in order that the views of the professional practicing engineers may be given due consideration, and that as the inquiry is planned to cover three years it is hoped that the Counselors from this Society may be available during that period. The financing of the project is practically assured on the basis of \$100 000 for the three-year period.

On motion, the President was authorized to appoint two members as Counselors to serve without expense to the Society, one member to be from New York City and the other from the vicinity of New York City.

PROPOSED AMENDMENT TO CONSTITUTION OF NORTHWESTERN SECTION APPROVED

A letter was presented, dated July 3, 1923, from Secretary Cutler of the Northwestern Section, transmitting the following proposed amendment to the Constitution of that Section for the approval of the Board:

Change Article III, Section 1, requiring that:

"The annual dues payable by all members shall be \$5.00 payable annually in advance on the first day of October, and any member whose dues are more than one year in arrears shall cease to be a member of this Section," to "the annual dues payable by all members shall be \$2.00 payable annually in advance on the first day of October, and any member whose dues are more than one year in arrears shall cease to be a member of this Section."

On motion, the proposed amendment to the Constitution of the Northwestern Section was approved.

HERRIN, ILL., MASSACRE

It was reported that the Executive Committee had authorized the President and Secretary to prepare resolutions in the matter of the massacre at Herrin, Ill., in which an Associate Member of the Society, John Earl Shoemaker, was one of the victims. The Secretary read the resolutions which were adopted in the following form, with the understanding that they would also be presented to the Annual Convention:

"Whereas, John Earl Shoemaker, Associate Member of the American Society of Civil Engineers, Chief Engineer for the Southern Illinois Coal Co., at Herrin, Ill., was killed in the Herrin Massacre June 22, 1922, while in the discharge of his duties, and

"Whereas, a year has passed and the legal machinery of the State has been unable to bring the guilty parties to justice,

"Therefore Be It Resolved, that the American Society of Civil Engineers assembled at Chicago in its Fifty-third Annual Convention, express its grief at this outrage, not only on one of its members, but also on the others killed with him and on the laws of this Nation, and, furthermore,

"Be It Resolved, that this Society deplore the fact that such a brutal disaster as the Herrin Massacre can occur in these United States without speedy justice, under the established procedure of the Courts, being meted out to the perpetrators of the crime, and furthermore,

"Be It Resolved, that copies of these resolutions be sent to the President of the United States, the Attorney General of the United States, and the Secretaries of the Departments of Labor and of Commerce, to the Governor and the Attorney General of the State of Illinois, to the forty-two Local Sections of the American Society of Civil Engineers, and to the family of the deceased."

INVITATION TO HOLD 1927 FALL SOCIETY MEETING IN ST. LOUIS

Director Brown presented an invitation to the Society to hold its 1927 Fall meeting in St. Louis, Mo., from the St. Louis Section of the Society, the Mayor of St. Louis, the Convention, Publicity and Tourist Bureau, the Chamber of Commerce, the Associated Retailers, and the Advertising Club of St. Louis.

On motion, these invitations were referred to the Committee on Technical Activities and Publications.

PROPOSED JOINT MEETING ON HYDRO-ELECTRIC POWER DEVELOPMENT

Director Hogan explained that there had been contemplated a joint meeting of the American Society of Civil Engineers, the American Institute of Elec-

trical Engineers, and the American Society of Mechanical Engineers in December, 1923, during the Annual Meeting of the last Society, at which it was proposed to present an engineering statement of the broad fundamental principles that must prevail in hydro-electric development, but that at a recent conference of the representatives of the interested Societies, it had been decided that this subject was so broad and so fundamental that it would not be possible to do justice to the presentation and discussion of it in one session, and in view of this it was decided to discuss with the governing bodies of each of the Societies the advisability of holding at a future date, apart from the Annual Conventions of any of the three Societies, a meeting lasting one or more days at which the entire subject could be presented with due regard to its importance. It was further agreed at the conference, that the joint session in December should consider merely one phase of hydro-electric power development, and a paper, which it is hoped John R. Freeman, Past-President, Am. Soc. C. E., will prepare, on the "Balancing of Steam Costs with Costs of Hydro-electric Power", has been suggested.

On motion, this matter was referred to the Committee on Technical Activities and Publications.

ADOPTION OF RESOLUTION URGING THAT RESPONSIBILITY FOR DESIGN OF CERTAIN
BRIDGES TO BE BUILT IN PITTSBURGH BE ENTRUSTED TO ENGINEERS
RATHER THAN ARCHITECTS

Director Chester stated that he had been advised that the Commissioners of the County of Allegheny, Pa., have under consideration the employment of architects for preparing plans and specifications and for supervising the construction of several important bridges in the City of Pittsburgh, and cited the resolution adopted by this Board on April 19, 1920, in this same matter, stating its opinion that the responsibility for the design and construction of such work should be entrusted only to qualified Civil Engineers.

Director Chester presented a draft of a resolution in this matter, and after discussion, the President announced that the spirit of the draft was approved and the final writing of it would be left to a Committee consisting of Messrs. Chester, Condron, and Humphrey, who subsequently prepared the following:

"Whereas, it has been brought to the attention of the Board of Direction of the American Society of Civil Engineers that the Commissioners of the County of Allegheny, Pennsylvania, have under consideration the employment of Architects for preparing plans and specifications and for supervising the construction of several important bridges in the City of Pittsburgh, and

"Whereas, these bridges are primarily engineering works demanding safety and economy and involving principles of design, construction and maintenance which come indisputably within the province of engineers, and

"Whereas, it is detrimental to the public interest to subordinate safety, utility, adequacy for future traffic, and cost of these structures to their appearance, although it is recognized that the embellishment and aesthetic features of bridges may properly be entrusted to those especially skilled in architecture,

"Therefore Be It Resolved, that the responsibility for the design and supervision of construction of such bridges should be entrusted only to qualified Civil Engineers and that a copy of this resolution be transmitted to the

Commissioners of the County of Allegheny through the Secretary of the Pittsburgh Section of the American Society of Civil Engineers."

RESOLUTIONS OF THANKS

On motion, the following resolution of thanks was adopted:

"Whereas, the Local Committee of the American Society of Civil Engineers which has had charge of the arrangements for the Convention, has left nothing undone which would add to the comfort and convenience of the visiting members and their guests, and has arranged a program whereby engineers of all branches of the profession may see large works of interest to them, and,

"Whereas, this has entailed a great deal of hard work by the Local Committee,

"Be It Resolved, that the Board of Direction hereby expresses its sincere thanks and hearty appreciation of work done by the Local Committee."

Director Huber offered the following resolution of thanks which was carried:

"The Board of Direction of the American Society of Civil Engineers assembled in regular meeting this tenth day of July 1923 hereby expresses to the Board of Direction of the Western Society of Engineers its appreciation and thanks for the hospitality extended to it upon the occasion of the very pleasant dinner of July 9, 1923.

"The Board also expresses its appreciation of the opportunity afforded upon this occasion for the promotion of co-operation and good fellowship by the joint meeting of the two Boards and the establishment, by this joint meeting, of a precedent which will do much to assist in accomplishing the aims and ideals for which the two Societies are jointly striving."

Director Chardon offered the following resolution of thanks, which was carried:

"That the Board of Direction, appreciating the generous welcome extended to the officers and members of the Society on the occasion of the 53d Annual Convention in Chicago by the Mayor, Commissioner of Public Works, City Engineer and other officials of the City of Chicago, express the thanks of the Society for the entertainment afforded during the Convention."

On motion, the Secretary was instructed to write letters of appreciation to all who had extended courtesies to the members of the Society during the Convention.

The Board recessed at 4:45 P. M., and resolved itself into a Membership Committee.

The Board reconvened at 6:10 P. M., and recessed for dinner at 6:25 P. M.

The Board reconvened at 10:40 P. M., on the adjournment of the Membership Committee with the same attendance as in the afternoon.

The Board adjourned at 11:20 P. M., to meet at 7:00 P. M., September 10, 1923, at Society Headquarters for the consideration of applications for membership, about which there is no question, and to meet at Richmond, Va., at 9:30 A. M. (Richmond time), October 15, 1923, this being the regular Quarterly Meeting of the Board.

OF THE TECHNICAL DIVISIONS

Highway Engineering Division

(Abstract)

July 11, 1923.—The meeting of the Highway Division was called to order at the Drake Hotel, Chicago, Ill., at 2:30 p. m.; Chairman W. K. Hatt presiding.

Chairman Hatt presented a statement in which he discussed the basis of the organization of the Division and the work which it might undertake.

The plan proposed by Chairman Hatt was discussed by Messrs. Arthur H. Blanchard, C. D. Curtiss, H. G. Shirley, G. W. Tillson, Anson Marston, W. M. Kinney, T. R. Agg, R. W. Crum, and Chairman Hatt.

After discussion, on motion, duly seconded, the By-Laws of the Division were adopted.

At the request of the Chairman, Director Richard L. Humphrey outlined briefly the plans for the Fall Meeting of the Society to be held at Richmond, Va., at which "Highways" will be the subject for discussion at the Technical Sessions.

The Chairman announced the election of the Executive Committee as follows: Messrs. C. J. Bennett, Chairman, Clifford Older, H. G. Shirley, and C. D. Curtiss.

The proposed program of the Division was discussed by Messrs. Shirley, Hatt, Humphrey, and Marston.

Article 3 of the By-Laws, relating to the Executive Committee, was discussed, and, on motion, duly seconded, the Chairman was authorized to re-word the first paragraph, thereof in such a manner as to provide that the Secretary of the Division shall be elected by the Executive Committee and hold office during its pleasure and that he shall not necessarily be a member of the Executive Committee.

Power Division

(Abstract)

July 11, 1923.—The meeting of the Power Division was called to order at the Drake Hotel, Chicago, Ill., at 2:00 p. m.; F. W. Scheidenhelm, M. Am. Soc. C. E., of the Executive Committee, presiding.

Director John P. Hogan was introduced by Mr. Scheidenhelm and addressed the meeting briefly on the work of the Technical Divisions.

A paper by W. L. Abbot, Chief Operating Engineer of the Commonwealth Edison Company, of Chicago, Ill., entitled "Power Development in the Middle West", was presented by the author, who illustrated his remarks with lantern slides. The subject was discussed by Messrs. House, Junkersfeld, Hamilton, and Wharton.

A paper entitled, "Ice Problems of Hydro-Electric Plants", by William T. Walker, M. Am. Soc. C. E., was presented by the author, and the subject

was discussed by Messrs. John R. Freeman, Daniel W. Mead, F. C. Shenehon, and B. F. Groat.

On motion, it was decided to appoint a committee to study the subject of ice problems in connection with hydro-electric plants.

The By-Laws of the Division, as proposed by the Executive Committee, were adopted, as follows:

ARTICLE I.—OBJECT

1.—The object of this Division shall be primarily the study and discussion of subjects pertaining to the development of power.

ARTICLE II.—MEMBERSHIP

1.—American Society of Civil Engineers members of any grade may become members of the Division by enrollment and payment of the dues.

2.—Other persons may be enrolled in this Division as affiliates, for the term of the calendar year of enrollment, upon the approval of the Executive Committee and upon payment of the dues. Such Division affiliates shall not have the privileges of voting nor of holding office.

ARTICLE III.—DUES

1.—All members and affiliates of this Division shall pay to the American Society of Civil Engineers dues of one dollar per calendar year in advance.

ARTICLE IV.—EXECUTIVE COMMITTEE

1.—Direction of the affairs of the Power Division shall be vested in the Executive Committee which shall consist of five corporate members of the American Society of Civil Engineers, who shall be elected annually to serve during the calendar year of their election and until their successors are elected.

2.—At each annual election two members of the Executive Committee shall be chosen to continue in office, provided, however, that no member of the Committee who has served three consecutive terms may be eligible for re-election.

3.—Blank forms for nomination, showing which members of the Executive Committee are eligible for re-election, shall be mailed not later than September 1 to each member of the Division. Resulting nominations shall be canvassed November 1, 2, or 3, by the Secretary of the American Society of Civil Engineers.

4.—The official nominations shall be determined as follows: The names of the members of the Executive Committee eligible for re-election shall constitute Group I, of which two are to be chosen. The names of those six members of the Division, but not of the Executive Committee, who have received the highest number of nominating votes shall constitute Group II, of which three are to be chosen.

5.—At least thirty days before the Annual Meeting of the American Society of Civil Engineers, ballots, showing the official nominations, together with appropriate envelopes, shall be mailed to each member of the Division. The ballots shall be canvassed and the result announced by the Secretary of the American Society of Civil Engineers within the three days preceding the Annual Meeting of the American Society of Civil Engineers. The persons receiving the highest number of votes in the respective groups shall be declared elected and shall take office at the end of the Annual Meeting of the Power Division.

6.—Three members of the Executive Committee shall constitute a quorum thereof. A majority vote of those present shall constitute official action by the Committee.

ARTICLE V.—OFFICERS

1.—The Executive Committee shall elect one of its members as Chairman. He shall act also as Chairman of the Division. In event he is to be absent from a meeting, the Chairman shall appoint a presiding officer.

2.—The Executive Committee shall elect a Secretary, who shall be a member of the Division.

ARTICLE VI.—MEETINGS

1.—The procedure at, and programs and dates of, meetings of the Division shall be determined by the Executive Committee, subject to modification by a majority vote of the members present at any meeting attended by at least fifteen members.

2.—The Annual Meeting of the Division shall be held in connection with the Annual Meeting of the American Society of Civil Engineers.

ARTICLE VII.—AMENDMENTS

1.—These By-Laws may be amended by the affirmative vote of two-thirds of the members present at any Annual Meeting of the Division or at any other meeting of the Division provided such other meeting and the proposed amendment of these By-Laws have been announced by mail posted at least thirty days in advance of such other meeting, and provided such other meeting is attended by at least twenty members of the Division.

Sanitary Engineering Division

(Abstract)

July 11, 1923.—The meeting of the Sanitary Engineering Division was called to order at the Drake Hotel, Chicago, Ill., at 2:00 P. M.; Chairman Kenneth Allen presiding.

On motion, duly seconded, the Constitution of the Division as adopted by the Executive Committee was ratified by the meeting.

On motion, duly seconded, the appointment of the following members as a Nominating Committee was confirmed: Messrs. T. C. Hatton, E. S. Rankin, J. F. Skinner, W. L. Stevenson, and Frank E. Winsor.

Chairman Allen announced the appointment of a Committee to Investigate the Question of Friction Sludge as follows: Messrs. Glenn D. Holmes, Chairman, Langdon Pearse, and C. E. Keefer.

A letter from the Chairman of the New Jersey Sewage Experiment Station relative to the appointment of a member of the Division to co-operate with the work of the Station, the New Jersey Sewage Works Association, and the New Jersey State Department of Health, was read by Chairman Allen, who stated that C. G. Wigley, M. Am. Soc. C. E., had been appointed as such consultant.

At the request of the Chairman, Mr. S. A. Greeley addressed the meeting on the proposed medal to be awarded for a paper to be presented before the Division, the method proposed for raising funds, etc.

The following testimonial of appreciation of the work of the late Rudolph Hering, M. Am. Soc. C. E., as prepared by the Executive Committee, was read by J. Frederick Jackson, M. Am. Soc. C. E. :

"In Memory of Rudolph Hering, 1847-1923

"Since the last meeting of this Division, one whose name and memory will always be held an honored possession and an inspiration by all Sanitary Engineers, has passed from our midst: Dr. Rudolph Hering died May 30, 1923.

"Dr. Hering became a Member of the American Society of Civil Engineers in 1876; was a Director in 1891, 1897, 1899, and Vice-President in 1900, 1901, and was a member of this Division.

"He was born in Philadelphia in 1847, and received his education in that city and in Dresden, Germany, graduating in 1867 as a Civil Engineer from the Royal Saxon Polytechnic, with a thesis on 'Art as Applied to Engineering.' The honorary degree of Doctor of Science was conferred on him in 1907 by the University of Pennsylvania.

"His first engineering work was that of a rodman in the layout of Prospect Park, Brooklyn, N. Y., in 1867-68, and soon after we find him connected with the Municipal Engineering Department of Philadelphia, that great school that has produced so many eminent civil engineers.

"We cannot follow the many changes of scene that have made up the drama of his professional career. Almost every city of any size in America has at some time sought his advice in the solution of important problems closely and deeply involving the people's life and welfare. We may, however, as a tribute to his memory, mention some of the projects that are, or should be, familiar to all Sanitary Engineers.

"He was chief or consulting engineer on many water supplies, among which were New York City, including the Catskill System, Philadelphia, Washington, D. C., Albany, Buffalo, Columbus, Ohio, Chicago, New Orleans, San Francisco, Sacramento, Tacoma, Minneapolis, Winnipeg, Toronto, Montréal.

"His advice was also sought in connection with the sewerage for New York City, Brooklyn, Philadelphia, Baltimore, Washington, D. C., Buffalo, Cleveland, Columbus, Ohio, Chicago, Indianapolis, New Orleans, Los Angeles, San Francisco, Portland, Honolulu, Victoria, Toronto, and on refuse disposal for many cities.

"He was a well known writer on almost every phase of municipal and sanitary engineering, and constantly exerted his influence in the furtherance of engineering education. His use of the English language was especially pleasing and clear, and his writings will long be read and studied, not only for the knowledge his words convey, but also for the appealing beauty of his style.

"To the members of the profession, amongst whom his work was done, he was a valued friend and brother; to young men he served as an ideal, and was an inspiration.

"Dr. Hering had long, by common consent, been called the Dean of the sanitary branch of the engineering profession in this country. He was a master builder of the profession, a creator of sanitary engineering and public health ideals. His reputation was international.

"Through the death of Dr. Hering, this Society and Division have lost not only a member of genuine distinction and one whose sterling qualities, sympathetic understanding and enthusiasm for his profession have stimulated and won the affectionate esteem of the profession, and especially of all who came into intimate contact with him. The American public also has suffered the loss of a great and valued citizen.

"The Sanitary Engineering Division of the American Society of Civil Engineers desires to express its profound sorrow for the death of Dr. Hering, and to extend its sympathy to the members of his family."

On motion, duly seconded, the following resolution was adopted by the meeting:

"Resolved: That the testimonial in memory of Dr. Rudolph Hering, presented to this meeting, be adopted and spread upon the minutes as a tribute to his memory, and that the chairman transmit, with the sympathy of the members of this Division, a copy to the members of Dr. Hering's family."

Chairman Allen presented a letter from Sol Pincus, Assoc. M. Am. Soc. C. E., which, after discussion, on motion, duly seconded, was referred to the Executive Committee for action.

On motion, duly seconded, a resolution of thanks was extended to Mr. Edwin A. Fisher and his associates in Rochester, N. Y., for the courtesy of the proposed program of entertainment for members of the Division on their way to attend the Annual Convention in Chicago, Ill.

On motion, duly seconded, a resolution of thanks was also extended to the Local Committee of Arrangement and Reception for the Annual Convention for its courtesies to the Division.

On motion, duly seconded, a resolution of thanks was extended to Mr. Hatton and his associates for their part in the program of the Division.

City Planning Division

(Abstract)

July 12, 1923.—The organization meeting of the City Planning Division was called to order at the Drake Hotel, Chicago, Ill., at 2:00 P. M.; Charles B. Ball, Temporary Chairman, and Jacob L. Crane, Jr., Secretary *pro tem*.

President Loweth expressed his appreciation of the movement and his desire that consideration should be given City Planning as a proper function of the profession.

A draft of proposed By-Laws was discussed and tentatively approved.

The following Temporary Executive Committee was appointed to serve until their successors were elected: Messrs. Nelson P. Lewis, Chairman, Charles B. Ball, Secretary-Treasurer, Harland Bartholomew, E. A. Fisher, and C. E. Grunsky.

After discussion of various City Planning subjects for presentation to the Annual Meeting in 1924 and the Annual Convention to be held in Pasadena, Calif., in 1924, it was determined to be impracticable to provide a program for the Fall Meeting to be held in October, 1923, at Richmond, Va.

Excursions and Entertainments at the Annual Convention, Chicago, Ill.

The program for the Fifty-third Annual Convention as a whole was prepared under the direction of the Committee on Technical Activities and Publications of the Society, Messrs. Richard L. Humphrey, Chairman, John N. Chester, C. E. Grunsky, John P. Hogan, and J. J. Yates.

The arrangements for the meeting were made by a Local Committee of Arrangement and Reception of which Onward Bates, Past-President, Am. Soc. C. E., was Honorary Chairman, H. R. Safford, President of the Illinois Section of the Society, Chairman, T. L. Condron, Director of the Society for District No. 8, Vice-Chairman, and W. D. Gerber, M. Am. Soc. C. E.,

Secretary. This Committee was assisted by a number of members of the Society residing in District No. 8.

A special invitation was extended to the members of the Western Society of Engineers to participate in all the events of the Convention.

Inspection Trips.—On the afternoon of Wednesday, July 11, 1923, inspection trips were made to the New Union Station, the street widening projects now being carried out by the City of Chicago, the Structural Materials Research Laboratory at Lewis Institute, and the City Water-Works, Pumping Station, and Intake Cribs.

Local Excursion by Automobile.—After the inspection trips on Wednesday afternoon, July 11, through the courtesy of Chicago engineers, those in attendance at the Convention, including the ladies, were taken for an automobile drive through the parks and boulevards of Chicago, stopping at the Exmoor Country Club for dinner and a social evening.

Local Excursions.—On Thursday, July 12, immediately after the close of the Technical Session, a party of 90 was taken in automobiles to inspect the Plant of the Universal Portland Cement Company at Buffington, Ind., where luncheon was served by the Company. Another party of 155 was taken by special train to Indiana Harbor, Ind., to the plant of the Inland Steel Company, where luncheon was also served by the Company. Other parties were taken by automobile to the new Gas Plant of the Chicago By-Products Coke Company, where luncheon was served, and to the Calumet Power Station of the Commonwealth Edison Company.

Entertainment for the Ladies.—On Wednesday, July 11, while the Technical Meeting was in session, the visiting ladies were entertained at luncheon at Marshall Field's and, later, joined in an automobile trip through the parks and boulevards of Chicago, which terminated at the Exmoor Country Club where dinner was served, followed by dancing. On Thursday, July 12, the ladies were entertained at luncheon at the South Shore Country Club by Mrs. Paul Willis and afterward taken for an automobile drive through the parks.

Informal Reception and Dinner Dance.—An informal reception and dinner dance was held on Thursday evening, July 12, at the Drake Hotel, at which 180 were in attendance, and which proved to be one of the enjoyable functions of the Convention.

All-Day Boat Trip on Lake Michigan.—On Friday, July 13, about 240 of the members and guests in attendance at the Convention participated in an all-day boat trip on Lake Michigan. Starting from the Municipal Pier, the excursion covered the entire Lake Front development from Wilmette, Ill. to Gary, Ind., affording an opportunity to inspect harbor improvements, ore docks, lake shore developments, etc.

All-Day Inspection Trip to Milwaukee, Wis.—A party of 35 members and guests were taken by special car over the Chicago and Northwestern Railway to Milwaukee, Wis., where they inspected the Sewage Treatment Works and the plant of the Allis-Chalmers Company.

Attendance.—There were approximately 735 members and guests registered in attendance at the Annual Convention.

Announcements

The Reading Room of the Society is open from 9 A. M. to 6 P. M., and from 7 P. M. to 10 P. M., every day, except Sundays, New Year's Day, Washington's Birthday, Memorial Day, Fourth of July, Labor Day, Thanksgiving Day, and Christmas Day; during July and August, it is closed at 5 P. M.

Future Meetings

September 5, 1923.—8:00 P. M.—A regular business meeting of the Society will be held, and a paper by Harold D. Hussey, Esq., entitled "Proposed Loading for Highway Bridges", will be presented for discussion.

This paper was printed in *Proceedings* for August, 1923.

Richmond, Va., Meeting

The Fall Meeting of the Society will be held at Richmond, Va., on October 17 to 20, 1923. The subjects for discussion at the Technical Sessions will be "Highways" and "The Port Problems of Norfolk, Va., and Vicinity".

Wednesday, October 17, 1923, 10 A. M.—Addresses of Welcome, followed by Technical Session.

October 17, 1923, 2 P. M.—Informal Conference of Representatives of Local Sections and Meetings of Technical Divisions.

October 17, 1923, 4 P. M.—Automobile Drive around Richmond to points of historic interest.

October 17, 1923, 8 P. M.—Social Evening with entertainment illustrative of phases of old plantation life in Virginia and dancing.

Thursday, October 18, 1923, 10 A. M.—Technical Session.

October 18, 1923, 2 P. M.—Excursion by special train to Williamsburg, Va., with a Virginia dinner at William and Mary College, followed by a motor trip to Jamestown, Va., thence by steamer to Norfolk, Va. The party will live on the boat until arrival at Washington, D. C., on Saturday morning.

Friday, October 19, 1923, 9 A. M.—Automobile excursion to points of interest in Norfolk, Va., including the Army and Navy Bases. After lunch, the party will embark on boats for a trip around the Harbor, visiting the Navy Yard, etc. The party will then proceed by boat to Yorktown, Va., stopping at Old Point Comfort for a visit to Fortress Monroe. At Yorktown various historic points connected with the Revolutionary War will be visited. The boat will then proceed up Chesapeake Bay and the Potomac River to Washington, D. C., arriving early Saturday morning.

Saturday, October 20, 1923, 9 A. M.—The party will be taken by automobiles to view the road tests at Arlington Farms, Va. Following luncheon as guests of the District of Columbia Section, the party will be taken on an automobile drive around Washington and its environs.

Searches in the Library

As the Library of the American Society of Civil Engineers has been merged in the Engineering Societies Library, requests for searches, copies, translations, etc., should be addressed to the Director, Engineering Societies Library, 29 West 39th Street, New York, N. Y., who will gladly give information concerning the charges for the various kinds of service. A more comprehensive statement in regard to this matter will be found on pages 35 and 36 of the Year Book for 1923.

New Local Sections of the American Society of Civil Engineers

The Constitution of the following Local Section has been approved by the Board of Direction since the list was prepared for the 1923 Year Book, pp. 116 *et seq.*:

Syracuse Section (Constitution Approved by Board, April 16, 1923).

Louis Mitchell, President; Henry G. Throop, Secretary-Treasurer, 2117 South Geddes Street, Syracuse, N. Y.

New Student Chapters of the American Society of Civil Engineers

The following Student Chapters have been authorized by the Board of Direction since the list was prepared for the 1923 Year Book, pp. 21 *et seq.*:

College of the City of New York, Organized 1923.

Henry B. Clapp, Jr., President; Bruce C. Hayter, Secretary, College of the City of New York, New York, N. Y.

Syracuse University, Organized 1923.

Archer Jordon, President; Merrill H. Sturtevant, Secretary, 1434 Midland Avenue, Syracuse, N. Y.

University of Michigan, Organized 1923.

E. J. Giffels, President; J. A. Fisher, Secretary, University of Michigan, Ann Arbor, Mich.

University of North Dakota, Organized 1923.

Roy V. Tilley, President; Richard B. Black, Secretary-Treasurer, Univ. of North Dakota, Grand Forks, N. Dak.

University of Tennessee, Organized 1923.

McLamore Roberts, President; James A. Thrasher, Secretary, Vendome Building, Knoxville, Tenn.

Membership

(From July 4 to August 1, 1923)

Additions

| MEMBERS | | Date of Membership. | |
|---|-------------|---------------------|--|
| ALLING, ARTHUR RICH. (Alling Blue Print Co.), 710 Pine St., San Antonio, Tex..... | Assoc. M. } | May 12, 1919 | |
| | M. } | July 10, 1923 | |
| BARDEN, WILLIAM JONES. Col., Corps of Engrs., U. S. A., 602 Burke Bldg., Seattle, Wash..... | | July 9, 1923 | |
| BATES, JOHN SCHUYLER. City Engr., Delano (Res., 353 College Ave., Fresno), Calif..... | Assoc. M. } | Mar. 1, 1910 | |
| | M. } | July 10, 1923 | |
| BENEDICT, RALPH ROBERT. Asst. to Chf. Highway Engr., Div. of Highways, State of Illinois, Springfield, Ill..... | Jun. } | May 28, 1912 | |
| | Assoc. M. } | Nov. 12, 1913 | |
| | M. } | July 10, 1923 | |
| BUBAR, HUDSON HARRIS. Chf. Engr., Mutual Chemical Co. of America, 201 West Side Ave., Jersey City, N. J..... | | May 28, 1923 | |
| BUCHECKER, ALBERT ISRAEL. Engr. of Sewer Design, City Engr.'s Office (Res., W. 725 Chelan Ave.), Spokane, Wash..... | Assoc. M. } | Jan. 19, 1920 | |
| | M. } | May 28, 1923 | |
| ESPY, THOMAS WILLARD. Constr. Engr., Spring Val. Water Co., 375 Sutter St., San Francisco, Calif. | Assoc. M. } | Sept. 3, 1913 | |
| | M. } | May 28, 1923 | |
| GIVEN, JAY ANKENY. Div. Engr., S. P. Co., Dunsmuir, Calif. | | July 9, 1923 | |
| HITCHCOCK, CHARLES HENRY. Div. Engr., P. & R. Ry., P. & R. Bldg., 9th and Spring Garden St., Philadelphia, Pa. | | July 9, 1923 | |
| ILSLEY, ARTHUR BENJAMIN. Cons. Engr. (Rice & Ilesley, Inc.), 18 Tremont St., Boston, Mass. | Jun. } | Feb. 28, 1899 | |
| | Assoc. M. } | Mar. 4, 1903 | |
| | M. } | July 10, 1923 | |
| JONES, JOHN EARL. Supt. of Constr., Bush, Roberts & Schaefer Co., Columbia, N. J..... | | July 9, 1923 | |
| MARSH, CLAUDE PERCY. Engr. of Structures, Cleveland Union Terminals Co., 2040 East 96th St., Cleveland, Ohio..... | | July 9, 1923 | |
| MERRIMAN, RICHARD MANSFIELD. Chf. Engr., Fuller & Maitland, 600 Walnut St., Kansas City, Mo. | Jun. } | Jan. 3, 1907 | |
| | Assoc. M. } | Jan. 17, 1916 | |
| | M. } | July 10, 1923 | |
| PAUL, CARROLL. Longyear Bldg., Marquette, Mich..... | | July 9, 1923 | |
| RANDELL, RALPH REGINALD. Asst. Engr., Federal Power Comm., Interior Dept. Bldg., Washington, D. C..... | Jun. } | Oct. 1, 1912 | |
| | Assoc. M. } | Mar. 13, 1917 | |
| | M. } | July 10, 1923 | |
| SPRIGG, CARROLL CRAWFORD. Pres., Gen. Contr. & Eng. Co., 40 Rector St., New York, N. Y..... | Assoc. M. } | Sept. 10, 1918 | |
| | M. } | July 10, 1923 | |
| STEPATH, CHARLES UNDERHILL. Advisory Engr., Portland Cement Assoc., 69 East Alvord St., Springfield, Mass..... | Jun. } | Feb. 3, 1903 | |
| | Assoc. M. } | July 10, 1907 | |
| | M. } | July 10, 1923 | |
| TAYLOR, WALTER HERRON. City Engr., Norfolk, Va..... | | July 9, 1923 | |
| URQUHART, LEONARD CHURCH. Asst. Prof., Bridge Eng., Cornell Univ. (Res., 203 Wyckoff Ave.), Ithaca, N. Y..... | Assoc. M. } | Mar. 12, 1918 | |
| | M. } | July 10, 1923 | |
| VAUGHN, FRANK K. Pres., The F. K. Vaughn Bldg. Co., 747 Main St., Hamilton, Ohio..... | | July 9, 1923 | |
| WEIR, JOHN HOWARD. Asst. Chf. Engr., A. D. Neeld, 708 Bakewell Bldg., Pittsburgh, Pa..... | | May 28, 1923 | |

MEMBERS—(Continued)

| | | Date of Membership. |
|---|---------------|------------------------|
| YOUNGS, WALTER CHARLES. County Highway Engr., } Assoc. M. | Nov. 26, 1918 | |
| Liberty County, Box 367, Dayton, Tex. } M. | May 28, 1923 | |

ASSOCIATE MEMBERS

| | | |
|--|---|--|
| AFFELDT, ERNEST JULIUS. Asst. Engr., The Graselli Chemical Co., Cleveland, Ohio | July 9, 1923 | |
| ALLBEE, WILLIAM GOLDSMITH. Asst. Supt., Engr., and Timekeeper, Hegeman & Harris, 185 Madison Ave., New York, N. Y. (Res., 21 John St., Paterson, N. J.) | Mar. 12, 1923 | |
| ANDERSON, EDWARD EMIL. Asst. Engr., State Road Comm. of West Virginia, Romney, W. Va. | July 9, 1923 | |
| BABCOCK, HENRY GRINNELL. Asst. Engr., New York and New Jersey Bridge & Tunnel Comms., Hall of Records, New York (Res., 261 Bement Ave., West New Brighton), N. Y. | July 9, 1923 | |
| CADY, RALPH HOWE. Asst. Engr., Frederick Snare Corporation, Box 733, Havana, Cuba. | July 9, 1923 | |
| CLARK, CHARLES SAMUEL. Contr. (Clark Constr. Co.), 407 Phelps Bldg., Binghamton, N. Y. | July 9, 1923 | |
| DAVIDSON, NORMAN HART. Asst. Hydr. Engr., Rochester Gas & Elec. Corporation, 34 Clinton Ave., North, Rochester, N. Y. . | July 9, 1923 | |
| DRESSLER, ROLDON FRANKLIN. With Calumet Steel Co., 208 South La Salle St., Room 1823, Chicago, Ill. | July 9, 1923 | |
| FLEMING, THOMAS JOSEPH. Gen. Contr., Box 222, Waterbury, Conn. | May 28, 1923 | |
| GIBSON, ROBERT CLAYTON. 410 Spruce St., Little Rock, Ark. | May 28, 1923 | |
| GOODALL, GEORGE EDWIN. Structural Designer, W. L. Huber, 2426 Le Conte Ave., Berkeley, Calif. | May 28, 1923 | |
| GOWEN, JOHN FELLOWS. Architectural Engr., Copper & Brass Re- search Assoc., 25 Broadway, New York (Res., 28 Walnut St., Dobbs Ferry), N. Y. | July 9, 1923 | |
| GRANDY, ALEXANDER CHARLES. 2487 Grand Ave., New York, N. Y. | July 9, 1923 | |
| HAERTLEIN, ALBERT. Care, Dwight P. Robinson & Co., 125 East 46th St., New York (Res., 530 North Broadway, North White Plains), N. Y. | Jun. Mar. 9, 1920 Assoc. M. July 9, 1923 | |
| HARN, JOHN EDWIN. Secy-Treas., Willard E. Harn Co., Inc., 2314 Oak St., Baltimore, Md. | Jun. May 12, 1919 Assoc. M. July 9, 1923 | |
| HEPBURN, GEORGE HUNT. 921 South 48th St., Philadelphia, Pa. | July 9, 1923 | |
| MCINTOSH, HAROLD AUSTIN. Supt., Southern California Edison Co., Los Angeles (Res., 2035 La France Ave. South Pasadena), Calif. | Jan. 15, 1923 | |
| MATTOON, ROY ERNEST. Engr. in Chg., Judicial Ditches, St. Louis and Carlton Counties, Carlton, Minn. | May 28, 1923 | |
| MORRISON, CHARLES WALDO. Valuation Engr., Joseph P. Day, Inc., 67 Liberty St., New York (1040 Park Pl., Brooklyn), N. Y. . | July 9, 1923 | |
| NEWTON, FREDERICK WHITMAN. Engr. Associate with John C. Wait, 233 Broadway, Room 1704, New York, N. Y. | July 9, 1923 | |
| NOYES, DONALD FRANKLIN. Asst. Res. Mgr., Quebec Development Co., Ltd., St. Joseph d' Alma, Que., Canada. | July 9, 1923 | |
| OLSEN, WILLIAM CHRISTIAN. Cons. Engr., Box 525, Kinston, N. C. | July 9, 1923 | |
| O'SHAUGHNESSY, THOMAS PATRICK. Res. Engr., Tule & Baxter Creek Irrigation Dists., Lassen County, 69 Carmelita St., San Francisco, Calif. | May 28, 1923 | |

ASSOCIATE MEMBERS—(Continued)

| | Date of Membership | |
|--|---------------------|------------------|
| ROBINSON, WILLIAM MORRISON, JR. Civ. and Valuation Engr., 701 Marion Bldg., Augusta, Ga. | July | 9, 1923 |
| RULAND, WILLIAM CLAY. Asst. Engr., New York State Highway Dept. (Res., 3 Washington Ave.), Cobleskill, N. Y. | July | 9, 1923 |
| SEELYE, SETH HENESS. Res. Engr., State Highway Dept., Columbia, S. C. | Jun. Nov. | 3, 1915 |
| SELLNOW, FRANK CADY. Senior Asst. Engr., North Jersey Dist. Water Supply Comm., Haskell, N. J. | July | 9, 1923 |
| SHEDD, THOMAS CLARK. Care, Phenix Bridge Co., Phenixville, Pa. | May | 28, 1923 |
| SHELDON, WILLIAM JOHN. Structural Engr., Worden Allen Co., Milwaukee, Wis. (Res., Jordan Lane, Millvale), Pa. | July | 9, 1923 |
| SHIREY, LACY LAMBERT. Asst. Engr., C. C. C. & St. L. Ry., 2329 North Delaware St., Indianapolis, Ind. | Jun. Nov. Assoc. M. | 9, 1920 28, 1923 |
| SMITH, LESTER CHAUNCEY. Mgr., Wharf and Dock Dept., Doullut & Williams Co., Inc., 816 Howard Ave., New Orleans, La. | July | 9, 1923 |
| SOUTHERINGTON, ERNEST JOSEPH. Office Engr., B. & O. R. R., 400 Central Union Station, Cincinnati, Ohio. | July | 9, 1923 |
| STANLEY, WILLIAM EDWARD. Asst. Engr., Pearse, Greeley & Hansen, 39 West Adams St., Chicago, Ill. | Jun. May Assoc. M. | 31, 1916 9, 1923 |
| TIEBOUT, CHARLES RALPH. With the International Steel & Iron Co., 923 Washington Ave., Evansville, Ind. | May | 28, 1923 |
| VARNEY, EDWARD ALLEN. Instr. in Applied Mech. and Structural Design, Wentworth Inst., Boston 17, Mass. | Jun. Nov. Assoc. M. | 26, 1919 9, 1923 |
| WALKER, WILLIAM OLIN. Cost Engr., Sinclair Refining Co., 611 Lincoln St., Coffeyville, Kans. | Jun. Mar. Assoc. M. | 7, 1921 28, 1923 |
| WARD, JOSEPH EUGENE. Cons. Civ. Engr. (Montgomery & Ward), 1016 City National Bank Bldg., Wichita Falls, Tex. | July | 9, 1923 |
| WILLIAMS, JAMES HAROLD. Box 51, McPherson, Kans. | July | 9, 1923 |

AFFILIATES

| | | |
|--|------|----------|
| MCLEAN, ROBERT. 28 Hansbury Ave., Newark, N. J. | July | 9, 1923 |
| SMART, CLINTON HAYNER. Sales Engr., W. & L. E. Gurley, 2209 Sixteenth St., Troy, N. Y. | July | 9, 1923 |
| THOMPSON, EDGAR HARVEY. Care, Northfield Constr. Co., 132d St. and Locust Ave., New York, N. Y. | Mar. | 12, 1923 |

JUNIORS

| | | |
|---|------|---------|
| CARSWELL, CHARLES. Junior Engr., Delaware River Bridge Joint Comm., 643 Marlyn Rd., Philadelphia, Pa. | July | 9, 1923 |
| CHEN, TSU YI. Structural Steel Detailer, Am. Bridge Co., 30 Church St., New York, N. Y. | July | 9, 1923 |
| DAUCHY, FREDERICK BURR. City Engr.'s Office, Riverside, Calif. | July | 9, 1923 |
| ECKLES, ROBERT ARTHUR. Archt. (W. G. Eckles Co.), L. S. & T. Bldg., New Castle, Pa. | July | 9, 1923 |
| EMANS, KARL. 516 East Court St., Flint, Mich. | July | 9, 1923 |
| HAVELIN, JULIUS EDWARD. Topographical Draftsman, Dept. of Docks, New York (Res., 956 Fifty-seventh St., Brooklyn), N. Y. | July | 9, 1923 |

JUNIORS—(Continued)

| | Date of Membership. |
|--|------------------------|
| JACOBI, ALFRED FRED. Designer, Board of Commrs., Port of New Orleans, New Orleans, La..... | July 9, 1923 |
| KEARNS, NORMAN HENRY. Civ. Engr., São Paulo Elec. Co., Ltd., Caixa Postal 2, Sorocaba, Brazil..... | May 28, 1923 |
| KINGSCOTT, LOUIS CLIFTON. Engr., H. G. Christman Co. (Res., 916 West Michigan Ave.), Lansing, Mich..... | July 9, 1923 |
| KOCH, VICTOR GEORGE. City Engr., Waco, Tex..... | July 9, 1923 |
| KOZMA, ALBERT BELA. Draftsman with Alexander Potter, 50 Church St., Room 291, New York, N. Y..... | May 28, 1923 |
| LARSON, HARRY GUSTAVE. 453 Bergen Ave., Jersey City, N. J.... | July 9, 1923 |
| RHEINGANS, WILLIAM JACOB. 234 Twenty-ninth St., Milwaukee, Wis. | May 28, 1923 |
| SAMMET, FRANCIS PARKMAN. Junior Highway Engr., Dept. of Public Works and Bldg., Div. of Highways, Ludlow, Ill..... | May 28, 1923 |
| WENTWORTH, JOHN LANGDON. Transitman, N. & W. Ry., 101 Terminal Station, Norfolk, Va..... | July 9, 1923 |
| WHEELER, JERROLD ELLSWORTH. 4868 Ellsworth Ave., Pittsburgh, Pa. | July 9, 1923 |
| WHIPPLE, LEONARD AUSTIN. 1732 Orrington Ave., Evanston, Ill.. | Mar. 12, 1923 |
| WHITEHOUSE, FRANKLIN SCHENCK. Junior Auditor, Federal Reserve Bank, 15 Nassau St., New York (Res., 137 Monterey Ave., Pelham), N. Y..... | July 9, 1923 |

Resignations

ASSOCIATE MEMBERS

| | Date of Resignation. |
|-------------------|-------------------------|
| WELLS, EMERY..... | June 25, 1923 |

Deaths

| |
|--|
| BATES, GEORGE WHITNEY. Elected Associate Member, June 16, 1919; Member, August 28, 1922; died July 11, 1923. |
| BRITTON, JOHN ALEXANDER. Elected Affiliate, January 6, 1915; died June 29, 1923. |
| HARING, JAMES SMITH. Elected Member, November 4, 1891; died August 12, 1922. |
| HUNT, ROBERT WOOLSTON. Elected Member, June 3, 1885; died July 11, 1923. |
| SHMELEFF, THEODOR SEMENOVITCH. Elected Member, September 7, 1892; date of death unknown. |
| WADSWORTH, HENRY HAYES. Elected Member, October 2, 1901; died July 7, 1923. |

Total Membership of the Society August 1, 1923

| | |
|--------------------------------|---------------|
| Members | 4 768 |
| Associate Members | 5 350 |
| Corporate Members | 10 118 |
| Honorary Members | 11 |
| Juniors | 550 |
| Affiliates | 168 |
| Fellows | 9 |
| Total | 10 856 |

The Co-operative Employment Service of the Engineering Societies

An Engineering Societies Service Bureau was established in December, 1918, as an activity of Engineering Council. It was managed by a board made up of the Secretaries of the four Founder Societies, and funds for its maintenance were provided by these Societies. On January 1, 1921, this Bureau was taken over by The Federated American Engineering Societies and was known as the Employment Service of that organization. Later, the management was taken back by the Founder Societies.

The improvement and extension of the Employment Service so that individual attention may be rendered to every member registered requires an increase in the available funds which can be secured only by making the Service partly self-supporting. A Joint Committee, representative of the four Founder Societies, after painstaking study presented a report on which has been based a co-operative plan that has been approved by the Governing Boards of the Founder Societies. Therefore, beginning September 1, 1923, the following rules will govern the operations of the Co-operative Employment Service:

- 1.—Service to men seeking positions is limited to members of the four Founder Societies.
- 2.—Service is extended to all employers of engineers without charge.
- 3.—Listing of positions available is entirely discontinued in the publications of the respective Societies. There is substituted, however, for such publication a weekly *Employment Service Bulletin* which is available to members of the four Societies only, at a subscription of \$3 quarterly, or \$10 per annum. Credit is given for any unexpended balance when a position is accepted.
- 4.—Publication of "Men Available" is continued by the respective Societies for all of their members and without charge.
- 5.—Members securing positions through the Employment Service are expected to co-operate with the Societies in financing the Employment Service by the payment within 30 days after placement of a nominal fee on the following basis: \$10 for all positions paying a salary of \$2 000 or less per annum; \$10 plus 1% of all salary in excess of \$2 000 per annum; temporary positions (one month or less) 3% of total salary received.

The fees received from members together with the financial support which the Founder Societies will continue to give, will make it possible to improve and expand the Service. However, a reasonable length of time and the whole-hearted support of all utilizing the Service will be required to secure the desired results.

Members of the American Society of Civil Engineers who desire to register should apply for further information, registration forms, etc., to Walter V. Brown, Manager, Engineering Societies Building, 29 West 39th Street, New York, N. Y. In order to be included in the list published in *Proceedings*,

copy must be received on or before the first of each month. All communications should be addressed to Mr. Brown, giving name, address, and membership in this Society.

MEN AVAILABLE

EXECUTIVE ENGINEER of more than thirty years' experience is available as Chief Engineer or Consulting Engineer on hydro-electric, railroad, irrigation, or river harbor work. CE-466.

STRUCTURAL ENGINEER, Assoc. M. Am. Soc. C. E.; graduate C. E.; age 38; married. Twenty years' practical experience on designs, estimates, specifications, reports, supervision, and construction; all classes of commercial buildings, power plants, and appurtenant structures; new plant developments from original projection to completed structure; water-front structures, retaining walls, heavy and eccentric foundations. Specialization: Reinforced concrete. Major experience in New York. At present employed by large industrial firm in Middle West on extensive plant development and power plant extension now nearing completion. Desires position requiring supervisory or executive ability. Capable project engineer. In fine health; no physical defects; energetic personality. A-1 references. Correspondence solicited. CE-467.

CONSTRUCTION ENGINEER; Graduate, Univ. of Maine, 1914; for bridge, dam, or highway work. CE-468.

GRADUATE CIVIL ENGINEER; Univ. of Colorado and Nebraska; desires position as Professor of Civil Engineering, railway and hydraulic engineer. CE-469.

CIVIL ENGINEER, Assoc. M. Am. Soc. C. E.; age 40; married; technical. Seventeen years' experience in miscellaneous engineering and construction work, including designs, heavy earthwork, railroad yards and buildings, etc.; extensive steam and electric railway valuation and maintenance. Now employed in executive position with large utility property. Desires change. Will consider position with railway, industry, or contractor. Personal interview solicited. CE-470.

PROFESSOR, M. Am. Soc. C. E.; Graduate of College of Liberal Arts and in Civil Engineering; with sixteen years' engineering experience along highway, railway, and structural lines; effective speaker and writer; would consider position teaching engineering or other work of educational character. CE-471.

PROFESSOR OF CIVIL ENGINEERING, Assoc. M. Am. Soc. C. E.; age 42; College Graduate. Thirteen years in civil engineering teaching, eight years as head of department, and nine years in general practice in various lines, especially hydraulic design. Desires position as dean of school or in other educational work of an engineering character. Now available. CE-472.

SANITARY ENGINEER, Jun. Am. Soc. C. E.; M. S. Univ. of Illinois; age 25; single. Experience, five summers on highway work, one year with State health department. Available 1 to 4 weeks. CE-473.

IRRIGATION ENGINEER, Assoc. M. Am. Soc. C. E.; graduate; age 40; married. Eighteen years' experience in investigation, location, construction, and operation of irrigation works. Available immediately. CE-474.

CONSTRUCTION OR RESIDENT ENGINEER, Civil, Assoc. M. Am. Soc. C. E.; technically trained. Fifteen years planning, designing, estimating, directing and superintending general construction; power houses; pumping stations; water-works; ore docks; furnaces; warehouses; railroad yard and terminal improvements and grade-crossing elimination, viaducts, heavy foundations, and mill buildings. Has handled organizations up to 1 200 men and operated elaborate plants. Desires to connect with a reputable consulting engineer or large progressive industrial concern, who want man whose experience demands heavy responsibilities. Available now. Go anywhere. Write or wire for further details and references. CE-475.

CIVIL ENGINEER, Assoc. M. Am. Soc. C. E.; Michigan graduate; age 29; married. At present Associate Professor of Civil Engineering in Southwest, teaching structural engineering. Eight years' experience, chiefly in structural engineering and construction. Desires position as designer on steel or reinforced concrete structures, or as field engineer or superintendent on construction. Location central to eastern part of country. Available for permanent position. CE-476.

CONTRACTOR ENGINEER, M. Am. Soc. C. E. Twenty years' experience on heavy construction work; subways; railroads; dams; retaining walls; foundations; estimating; planning; organizing; and superintending. CE-477.

CIVIL AND HYDRAULIC ENGINEER, Assoc. M. Am. Soc. C. E.; B. S., 1907; C. E., 1912; age 37; married. Thirteen years' irrigation experience, including location, design, construction, and operation. Three years' experience as hydrographer, measuring streams and preparing data for publication according to U. S. Geological Survey standards. Now available. CE-478.

BRIDGE ENGINEER, Affiliate, Am. Soc. C. E.; age 35; married. Broad experience in design and construction. Available as chief or deputy with State or country organization. CE-479.

GRADUATE CIVIL ENGINEER. Seven years' experience in railways, valuation, water supply, fire prevention and protection, general construction, and city subdivisions. Three years' instruction in mechanics, hydraulics, public water supply, construction, plane, top, and mine surveying and descriptive geometry. Desires position as Assistant Professor of Civil Engineering. Personal interview in Chicago during summer. CE-480.

CITY PLANNING ENGINEER, Assoc. M. Am. Soc. C. E. Twenty years' experience in all phases of city development: City planning, housing, zoning, parks, sub-divisions, highways, traffic, industrial expansion, etc. Practical work also in Canada and Europe. Capable writer and speaker. At present employed in Government office. Open for any position in city planning work. CE-481.

GRADUATE CIVIL ENGINEER; age 30; married. Three years with general contractor, two as assistant estimator and one as field engineer on construction of industrial shop building. CE-482.

AMERICAN ENGINEER, with twenty years' wide experience in the United States and abroad, now employed in Southwest, desires change. Steam and electric railway location, construction, maintenance, and operation; power plant design and construction; steam shovel and underground mining and tunneling. CE-483.

CONSTRUCTION ENGINEER, Assoc. M. Am. Soc. C. E.; Graduate, Mass. Inst. Tech. Seventeen years' experience in design and construction including locks, dams, heavy concrete and steel work, dredging, etc. Eight years in foreign country as executive engineer in charge of large river improvement project. Will consider position in United States or abroad. CE-484.

CIVIL ENGINEER, Assoc. M. Am. Soc. C. E.; age 40; single. Fifteen years' general field engineering; construction, railroad and general; railroad maintenance and valuation; aqueduct location. CE-485.

CONSTRUCTION EXECUTIVE, M. Am. Soc. C. E.; age 36; for United States or foreign field. Life experience diversified engineer, construction, and other contracts, at home and abroad. Available for reporting on or handling works or projects. Highest references. Payment by results preferred. Seeks opportunity to earn not less than \$6 000. Now in New York. CE-486.

Additions to Engineering Societies Library*

(From July 2 to July 31, 1923)

The statements made in these notices are taken from the books themselves, and this Society is not responsible for them.

ENGLISH CATALOGUE OF BOOKS, 1922.

Lond., 1923. (Purchase.)

WILLING'S PRESS GUIDE.

Lond., 1923. (Purchase.)

"ELECTRICIAN" ELECTRICAL TRADES DIRECTORY AND HANDBOOK.

Lond., 1923. (Purchase.)

NEW GUIDE TO REFERENCE BOOKS.

Isadore G. Mudge, 1923. (Purchase.)

GUIDE TO THE CURRENT PERIODICALS AND SERIALS OF THE UNITED STATES AND CANADA.

Henry Ormal Severance. Fourth Edition. Supplement, December, 1920-January, 1923. (Purchase.)

MINERVA JAHRBUCH. 1923.

(Purchase.)

JOB ANALYSIS AND THE CURRICULUM.

Edward K. Strong and R. S. Uhrbrock. Balt., 1923. (Gift.)

REA'S FAR EASTERN MANUAL OF FINANCE AND INDUSTRY.

First Edition. 1923. (Purchase.) Shanghai, China.

FINANCIAL AND OPERATING RATIOS IN MANAGEMENT.

By James H. Bliss. N. Y., Ronald Press Co., 1923. 396 pp., tab., 9 x 6 in., cloth. \$6.00.

In every branch of industry there are certain characteristic financial and operating ratios, depending on the nature of its activities. The aim of this book is to develop certain standard ratios for the use of managing executives in securing more effective control of the finances and operations of their business. Part one considers the various ratios and turn-overs which should be noted and compared; and explains how they are computed and their bearing on the general problem. Part two contains tables compiled from published reports of representative industries, with explanations. These statistics afford standards which enable a company to compare its own statistics with standards within the industry and thus gauge its competitive position. The book also aims to show the methods by which a concern may prepare standards in its own line.

PROCEEDINGS OF THE SECOND NATIONAL CONFERENCE, OCTOBER, 1922.

Highway Education Board. Wash., D. C., 1923. (Gift.)

DIE WIRTSCHAFTSKRAFTE OESTERREICHS.

Karl Hudeczek. Wien, 1921. (Gift.)

UNIVERSITY OF MICHIGAN PUBLICATIONS,

Containing Material of a Scientific or Learned Character. Esther Anne Smith. Ann Arbor, 1922. (Gift.)

MILLIONTH MAP OF HISPANIC AMERICA.

American Geographical Society. First Sheet. N. Y., 1923. (Purchase.)

PROCEEDINGS, VOL. 60, 1922.

U. S. National Museum. (Gift.)

* Unless otherwise specified, books in this list have been donated by the publishers.

NUMERISCHE INTEGRATION.

By Fr. A. Willers. Berlin und Leipzig, Walter de Gruyter & Co., 1923. 116 pp., 6 x 4 in., boards. 25 cents.

This book treats of the purely mathematical methods of practical mathematics, as far as these deal with problems of infinitesimals. It thus supplements the volume of the Sammlung Götschen entitled "Graphische Integration" and, like the latter, will be useful to mathematicians, physicists, and especially to engineers. The presentation is as simple as possible and requires nothing beyond a knowledge of the elements of the calculus. Section one contains formulas for interpolation and the methods of tabular differentiation and integration. A short section follows on the formulas of Newton, Gauss, and Chebichev. The next section treats of the mathematical analysis of data obtained empirically, and the final chapter discusses the approximate integration of differential equations.

INTRODUCTION GEOMETRIQUE A L'ETUDE DE LA RELATIVITE.

By Henri Marais. Paris, Gauthier-Villars et Cie., 1923. 191 pp., 10 x 7 in., paper. 15 fr.

The author of this book has set himself the task of preparing, in a form as simple and clear as possible, a sort of grammar of the mathematical language of relativity, from the viewpoint of geometry. He studies successively euclidean space and the laws of invariance for linear transformations, then Riemann space and the laws of invariance for continuing transformations, indicating the part that these geometric ideas play in theories of relativity. The book is intended to help students of relativity by removing purely formal difficulties from their path, through familiarizing them with the fundamental concepts and processes of calculation.

REPORT WITH PLAN FOR THE COMPREHENSIVE DEVELOPMENT.

Of the Port of New York, December 21, 1921. Port of New York Authority. Albany, N. Y. (Gift.)

USE OF GEODETIC CONTROL FOR CITY SURVEYS.

Hugh C. Mitchell. (U. S. Coast and Geodetic Survey.) Washington, D. C. (Purchase.)

ELEMENTS OF GRAPHIC STATICS.

By Clarence W. Hudson and Edward J. Squire. N. Y. & Lond., McGraw-Hill Book Co., 1923. 91 pp., diagrams, 8 x 5 in., cloth. \$1.25.

This is a brief textbook giving the essentials of graphic statics, especially in their application to the calculations of reactions, shears, and moments. It is intended for students of engineering, and includes only the material thought to be actually necessary for a working knowledge of the subject. The text can be covered in about fifteen classes.

HYDRAULICS FOR ENGINEERS AND ENGINEERING STUDENTS.

By F. C. Lea. Fourth Edition. Lond., Edward Arnold & Co., 1923. 594 pp., illus., tab., 9 x 6 in., cloth. \$6.00. (Gift of Longmans, Green & Co., N. Y.)

Dr. Lea's book is intended as a reference book for practising engineers and as a textbook for serious students. He attempts to deal with the subject in a wider sense than is done in most textbooks, to embody the results of the latest experimental research on the subject, and to give sufficient details to indicate the methods used in obtaining those results. This edition has been revised to include the latest experiments. The original chapter on turbines has been much enlarged and that on pumps has been divided into two chapters.

BESTIMMUNG STROMENDER FLUSSIGKEITSMENGEN IM OFFENEN GERINNE.

Oskar Poebing. Berlin, 1922. (Purchase.)

STRUCTURE OF ATOMS.

By Alfred Stock. N. Y., E. P. Dutton & Co., [1923]. 88 pp., diagrams, 9 x 6 in., cloth. \$2.50.

In 1919, Dr. Stock, of the University of Berlin, delivered to the chemists in one of the large German dye works a series of lectures on recent advances in the knowledge of the structure of atoms. These lectures, revised and brought up to date, are here presented in an English translation. Dr. Stock introduces the subject by a review of the evolution of atomic theories to the time of the recent period of development. This is followed by an account of the newer work, which is classified by the experimental methods, optical, electrical, and radio-chemical, which have been used. Chapters on the structure of crystals and the structure of atoms, with a brief bibliography, conclude the book. The author has avoided complicated theoretical physics and mathematics and has given prominence to the experimental point of view.

THEORETICAL CHEMISTRY.

By Walter Nernst; Revised by L. W. Codd. Lond., Macmillan & Co., 1923. 922 pp., tab. 9 x 6 in., cloth. 28s. (Gift of Macmillan Co., N. Y.)

The many friends of this treatise, first published nearly thirty years ago, will welcome this new edition, which is based on the eighth-tenth German edition. Eight years have elapsed since the fourth edition, during which time many important advances have been made in chemistry and physics. The revision therefore has been unusually thorough. The more important additions deal with the structure of atoms, the applications of X-ray spectroscopy, and the determination of molecular dimensions. The chapters on radioactivity and the theory of the solid state have been largely rewritten.

LES ISOTOPES.

By A. Damien. Paris, Gauthier-Villars et Cie, 1923. 118 pp., illus., diagrams, tab. 10 x 7 in., paper. 12 fr.

This monograph, based on a bibliographic study of the literature of isotopy, is intended primarily to familiarize chemists with the subject, but it will appeal also to others desirous of becoming acquainted with the work in this field. The author gives a general account of the whole question, in which all experimental results are presented, their relative value determined, and the conclusions to which they lead are pointed out. Full references to sources of information are provided.

MANUFACTURE OF HYDROCHLORIC ACID AND SALTCAKE.

Alexander Charles Cumming. Lond., 1923. (Purchase.)

ALLGEMEINE PHOTOCHEMIE.

J. Plotnikow. Berlin, 1920. (Gift.)

ENZYKLOPADIE DER TECHNISCHEN CHEMIE, VOL. 12.

Ullman. Berlin. (Purchase.)

THEORY OF EMULSIONS AND EMULSIFICATION.

W. Clayton. Lond., 1923. (Purchase.)

ABSORPTION OF NITROUS GASES.

By H. W. Webb, N. Y., Longmans, Green & Co.; Lond., Edward Arnold & Co., 1923. 372 pp., illus., tab. 9 x 6 in., cloth. \$8.50.

In almost all processes for the fixation of nitrogen, the production of nitrogen oxides is a fundamental intermediate step. These nitrous gases are usually absorbed in water, but the process of absorption is frequently conducted on rule-of-thumb methods, with unnecessary losses. The author discusses the absorption of nitrous gases in water, both from a theoretical and industrial standpoint. The most important types of absorption processes, other than water absorption, are also considered and compared, and the methods available for utilizing commercially the dilute nitric acid obtained from water absorption are reviewed briefly.

CHEMISTRY OF LEATHER MANUFACTURE.

By John Arthur Wilson. (American Chemical Society. Monograph Series). N. Y., Chemical Catalog Co., 1923. 343 pp., illus., diagrams, tab., 9 x 6 in., cloth. \$5.00.

The technological monographs issued under the direction of the American Chemical Society are intended to serve two purposes: First, to present the knowledge available on the chosen topic in a readable form, intelligible to those whose activities may be along a different line; and second, to promote research by furnishing a well digested survey of the progress already made in a field and by pointing out directions in which investigation is needed. This volume summarizes the knowledge of the chemistry of leather manufacture, including considerable information on the histology of skin and the physical chemistry of the proteins. It presents a summary of the existing literature considered valuable by the author and also the results of many special investigations, reported here for the first time.

TITANIUM.

R. H. A. Robinson. (Canada. Bureau of Mines, Mines Branch.) Ottawa, 1922. (Gift.)

MEMOIR AND MAP OF LOCALITIES OF MINERALS

Of Economic Importance and Metalliferous Mines in Ireland. Grenville A. J. Cole. Lond., 1923. (Purchase.)

CATALOGUE OF GEOLOGICAL MAPS OF SOUTH AMERICA,

With an Index Map. Henry B. Sullivan. (Research Series No. 9.) N. Y., 1922. (Purchase.)

GEOLOGIE VON MEXICO.

Wilhelm Freudenberg. Berlin. (Purchase.)

RIDDARHYTTE MALMPALT. SVERIGES GEOLOGISKA UNDERSOKNING.

Sweden—Bureau of Mines, Board of Trade. Stockholm, 1923. (Gift.)

GEOGRAPHY OF THE CENTRAL ANDES.

Alan G. Ogilvie. N. Y., 1922. (Purchase.)

PETROLOGY FOR STUDENTS.

By Alfred Harker. (Cambridge Geological Series.) Sixth Edition. Cambridge, England, University Press, 1923. 302 pp., illus., 8 x 5 in., cloth. 8s 6d. (Gift of Macmillan Co., N. Y.)

This work, now offered in a further revised edition, has been written to serve as a guide to the study of rocks in thin slices, and is to be supplemented by the examination of actual specimens. The examples chosen are, as far as possible, from American and British rocks. References to published descriptions are given throughout the book.

COMING OF COAL.

Robert W. Bruère. N. Y., 1922. (Gift.)

PATENTS THROUGHOUT THE WORLD.

By William W. White and Wallace White. N. Y., Trade Mark Law Publishing Co., 1923. 244 pp., maps, tab., 9 x 6 in., cloth. \$7.50.

In this digest of the patent laws of the different countries, a uniform arrangement of the data under the same headings has been adopted for each country. Ready reference is facilitated further by a chapter of general information on foreign countries and by a series of tables which show at a glance the conditions under which patents may be obtained from the various Governments. The book will be useful to inventors and patent attorneys.

DISCOVERIES AND INVENTIONS OF THE 20TH CENTURY.

Edward Cressy. Second Edition, Enlarged. Lond., 1923. (Gift.)

DICTIONNAIRE ANGLAIS-FRANCAISE-ALLEMAND DE MOTS

Et Locutions Interessant la Physique et la Chimie. R. Comubert. Paris, 1922. (Purchase.)

LE MOTEUR HUMAIN ET LES BASES SCIENTIFIQUES DU TRAVAIL PROFESSIONNEL.

By Jules Amar. Second Edition. Paris, Dunod, 1923. 690 pp., illus., tab., 7 x 5 in., cloth. 45 fr.

Amar's book is a study of the mechanism of man as a motor, and of the way this motor works. It attempts to present all the physiological and physical data available for the scientific study of labor and for determining the efficiency of human work. Although the World War has interfered seriously with scientific research during the nine years that have elapsed since the first edition appeared, some interesting investigations have been made, which have been incorporated in the new edition. New material is given on nutrition, physical training, locomotion, and on the measurement of sense perception, as well as on experimental methods.

PROCEEDINGS, 1922.

National Safety Council. (Purchase.)

MINUTES OF PROCEEDINGS, MARCH, 1922.

Burma Engineering Congress. Rangoon. (Gift.)

ABSOLUTE MEASUREMENTS IN ELECTRICITY AND MAGNETISM.

By Andrew Gray. Second Edition. Lond., Macmillan & Co., 1921. 837 pp., illus., tab., 9 x 6 in., cloth. 42s. (Gift of Macmillan & Co., N. Y.)

It is nearly thirty years since the first edition of this well-known treatise appeared, and the new edition should be of interest to all who have to do with absolute measurements, and particularly to workers in wireless telegraphy. Dr. Gray has rewritten his book, omitting certain subjects now adequately cared for elsewhere, and expanding those parts of practical importance to-day. The work now appears in one volume.

ATLAS OF U. S. A. ELECTRIC POWER INDUSTRY.

By Frank G. Baum. N. Y., McGraw-Hill Book Co., 1923. 57 pp., diagrams, maps, 11 x 17 in., cloth. \$10.00.

A connection of twenty-five years with water power development and electric power transmission has directed Mr. Baum's attention to the problem of providing electric power all over the United States. This, he thinks, cannot be accomplished satisfactorily by the present construction of power systems radiating from large central stations and interconnected where they meet, but will require a wider spread use of water power in combination with large steam power plants. In the present study, he has collected the facts of the

power resources and power demands of the United States, and presented them in easily understood form, largely as maps and graphic charts. He also gives a possible solution of the problem, in the form of a series of regional power districts and a constant-potential transmission system covering the country.

ELECTRICAL HANDLING OF MATERIALS;

Vol. 4: Machinery and Methods. By H. H. Broughton. Lond., Ernest Benn, 1923. 334 pp., illus., diagrams, 11 x 9 in., cloth. 50s.

This, the concluding volume of Mr. Broughton's useful treatise, has for its subject the machinery used for handling materials mechanically and the methods of handling and storing. The opening chapters describe elevators, conveyors, belt conveyors, automatic feeders, and ship hoists. Succeeding chapters are devoted to methods of handling various articles, especially ore, coal, grain, and similar bulk materials, and foodstuffs. Like the other volumes, this one deals broadly with the question of design and gives many examples that illustrate the present state of the art.

DIE DRAHTLOSE TELEGRAPHIE UND TELEPHONIE.

By P. Lertes. Second Edition. Dresden and Leipzig, Theodor Steinkopff, 1923. 200 pp., 8 x 6 in., paper. 70 cents.

This volume is one of a series of books reviewing the progress in various sciences from 1914 to the present time, which is being issued to acquaint German scientific workers with the advances made while their labors were interrupted by the World War. The present book treats of radio communication. It summarizes systematically the important publications of all countries, presenting the main results in condensed form, and giving exact references to the original papers. Radio engineers should find it a convenient reference book.

CARATTERISTICHE COSTRUTTIVE DELLE TURBINE IDRAULICHE

Negl' Impianti Attuali. By Guido Gambardella. Milano, Antonio Vilaraldi, 1923. 133 pp., 10 x 7 in., paper. (Gift of the author.)

In this contribution to the literature of the hydraulic turbine, the author is concerned with the correlation of recent theory and current practice and with a comparison between the results of calculation and those obtained by laboratory tests. Theoretical and experimental data furnished by various manufacturers are given and modern features in distribution and regulation are explained. The book is intended for students who wish to understand current manufacturing practices, for purchasers of turbines, and for manufacturers.

POWER PLANT MACHINERY;

Vol. 1: Mechanism of Steam Engines. By Walter H. James and Myron W. Dole. Second Edition. N. Y., John Wiley & Sons; Lond., Chapman & Hall, 1923. 277 pp., illus., diagrams, 9 x 6 in., cloth. \$3.00.

In revising their textbook on the "Mechanism of Steam Engines", the authors decided to expand the work into a general discussion of the principal machines used in a steam power plant; of this work, the present book becomes Vol. 1. It is an elementary treatise on the kinematics of reciprocating steam engines and steam turbines, planned for students who take up the subject after a course in the elements of mechanism and before they study the theory and practice of heat engineering. An effort has been made to present the subject so that the beginner will understand the mechanical principles on which the engine operates, with special reference to the valve gear and governing devices, and the various diagrams used to study them. The aim is to treat these questions logically and concisely, yet with sufficient detail to make the principles easily understood.

ELEMENTS OF MACHINE DESIGN.

By Dexter S. Kimball and John H. Barr. Second Edition. N. Y., John Wiley & Sons; Lond., Chapman & Hall, 1923. 446 pp., illus., tab., 9 x 6 in., cloth. \$4.00.

This is a discussion of the fundamental principles of design, intended primarily for students, but also, the authors hope, of interest to designers. The principal part of the work is devoted to the discussion of the more important details of machines, with a view of showing how theoretical considerations and equation are applied and modified in practice. The new edition has been thoroughly revised, and the arrangement changed as a result of experience. A chapter on the balancing of machine parts has been added.

MOTOR TRANSPORTATION OF MERCHANDISE AND PASSENGERS.

By Percival White. N. Y., & Lond., McGraw-Hill Book Co., 1923. 486 pp., diagrams, tab., 9 x 6 in., cloth. \$4.00.

This book considers motor transportation as a rapidly developing business activity. It recognizes and relates all phases, treating, for the first time, both merchandise and passenger transportation by motor vehicle in relation to each other and to other methods. It is intended for owners and operators of fleets of trucks and busses, students of transportation, and automotive engineers interested in the economic phases of this problem.

LOCOMOTIVE CATECHISM.

By Robert Grimshaw. 1923 Edition. N. Y., Norman W. Henley Pub. Co., 1923. 958 pp., illus., 8 x 5 in., cloth. \$4.00.

A new edition of this well-known instruction book is presented, in which attention is paid to various topics recently brought to the notice of engine-men and firemen, such as the uniflow engine, the improved superheater, recent power brakes, and the electric locomotive. Other parts of the text have been revised and improved.

PRACTICAL RAILWAY MAINTENANCE.

By Charles Weiss. N. Y., McGraw-Hill Book Co., 1923. 349 pp., tab., 9 x 6 in., cloth. \$3.50.

This book is a concise account of methods and equipment for maintaining railroad track and structures, and is intended as a text for students and beginners, and also as a reference book for those with experience. The book is divided into four sections. Section 1, on details of track work, discusses gauge, surface, rail elevation, drainage, rail renewing, yard track work, wrecks, snows, roadbed, etc. The second section treats of the use and care of track materials and track tools. Section 3 is devoted to miscellaneous subjects, such as handling men, labor-saving devices, reports and records, fire protection, signals, bridges, and minor buildings. Section 4 contains a collection of tables useful to track men.

RAILROAD LABOR BOARD.

By Joshua Bernhardt. (Institute for Gov't. Research. Service Monographs, No. 19.) Balt., Johns Hopkins Press, 1923. 83 pp., 9 x 6 in., cloth. \$1.00.

This is a concise yet complete account of the origin and purpose of the Railroad Labor Board, of the activities that it has undertaken, and the organization available for its work. The book is founded on official statements and reports. A bibliography of publications relating to the administration of the Board is included and also a copy of the laws governing it.

CHAPTERS ON THE HISTORY OF THE SOUTHERN PACIFIC.

By Stuart Daggett. N. Y., Ronald Press Co., 1922. 470 pp., illus., port., maps, 9 x 6 in., cloth. \$5.00.

The author has presented herein a careful, detailed study of the important business problems connected with the history of the Southern Pacific Railroad lines, based on an extensive study of published and unpublished sources of information. The subject-matter deals with the economic and political history of the road from its inception to the settlement of the oil and timber land litigation in 1916. The author is Professor of Railway Economics in the University of California.

GEARS AND GEARING.

S. Bramley-Moore. Lond. [1921]. (Purchase.)

BOILER INSPECTION LAW AND RULES

Formulated by Board of Boiler Rules. Ohio Dept. of Industrial Relations. Div. of Boiler Inspection. January, 1922. Columbus. (Gift.)

TEXTBOOK ON HEAT AND HEAT ENGINES, VOL. 2.

Andrew Jamieson. Rewritten by E. S. Andrews. Eighteenth Edition. Lond., 1923. (Purchase.)

INTERNAL COMBUSTION ENGINE;

Vol. 2: High Speed Engines. Harry R. Ricardo. Lond., 1923. (Purchase.)

DIE NORMUNG DER GEWINDE-SYSTEME.

George Schlessinger. Berlin. (Gift.)

VERSUCHE UEBER DIE WIDERSTANDSAHIGKEIT VON KESSELWANDUNGEN.

Heft 4, Versuche mit Flanschenverbindungen zu Rohrleitungen. Carl Bach. Berlin, 1899. (Purchase.)

LES MOTEURS DIESEL ET LES MOTEURS SEMI-DIESEL;

Types Fixes et Types Marine. G. Vaillot. 2 vol. Paris, 1923. (Purchase.)

INDUCTION VOLTAGE REGULATOR.

E. F. Gehrkins. Schenectady, N. Y. (Gift.)

STUDY ON THE BLASTING OF ROCKS.

S. Ando. Typewritten copy. (Gift.)

MINING LAWS OF OHIO.

Ohio Dept. of Industrial Relations. Columbus, 1921. (Gift.)

JAHRBUCH FÜR DAS BERG UND HUTTENWESEN IN SACHSEN.

1922. Freiberg. (Gift.)

GEOLOGICAL SURVEY:

A Bibliography of South African Geology to End of 1920. A. L. Hall, comp. (Pretoria, Union of So. Africa, Dept. of Mines and Industries.) Lond. (Purchase.)

THIRD STANDARDIZATION BULLETIN.

American Mining Congress. (Purchase.)

LES SOURCIERS ET LEURS PROCÉDÉS.

Henri Mager, Second Edition. Paris, 1923. (Purchase.)

DIE METHODE DER FESTPUNKTE

Zur Berechnung der statisch unbestimmten Konstruktionen mit zahlreichen Beispielen aus der Praxis. Ernst Suter. Berlin, 1923. (Purchase.)

CITY PAVEMENTS.

By F. S. Besson. N. Y. & Lond., McGraw-Hill Book Co., 1923. 421 pp., illus., diagrams, tab., 9 x 6 in., cloth. \$5.00.

The material here presented has been gathered by the author during the past four years, in the course of a study of highway engineering. It covers the questions that arise in highway work in a modern city, both regarding the details of paving and also the larger aspects of the problem of providing satisfactorily for city traffic. The author is Assistant Engineer Commissioner, District of Columbia. Contents: Administration and Management; Planning and Design; Concrete; Bituminous Paving; Block Surfaces, Stone Curbs, Trees.

MANUAL, 1922.

American Railway Engineering Association. Chic. (Purchase.)

RURAL POST ROADS.

Report, 1922, on Construction of Rural Post Roads in Co-operation with States and Federal Administration. U. S. Dept. of Agriculture. Wash. (Purchase.)

SOME OF THE ACTIVITIES OF THE MISSISSIPPI RIVER COMMISSION

From 1879 to 1923. J. A. Ockerson. St. Louis, Mo., 1923. (Gift.)

REPORT ON THE WATER POWER AND STORAGE POSSIBILITIES

Of the Hudson River. New York State Water Power Commission. Albany, 1922. (Gift.)

DOCK AND HARBOUR ENGINEER'S REFERENCE BOOK.

By Brysson Cunningham. Second Edition. Lond., Charles Griffin & Co.; Phila., J. B. Lippincott Co., 1923. 319 pp., diagrams, tab., 6 x 4 in., fabrikoid. 9s. (Gift of J. B. Lippincott Co.)

The subjects considered in this book are harbor and dock construction; quay and dock walls and wharfs and their equipment; locks, graving and floating docks and their equipment; dredging and subaqueous rock removal; maritime canals, channel rectification and demarcation, and coast defense. The volume does not attempt to be complete. It is based on notes made for his own use by the author, and touches only lightly on theoretical considerations, being more concerned with particulars of works actually carried out and with their cost.

UEBER BINNENSCHIFFFAHRTS-VERKEHRSWEGE

Und einige ihrer baulichen Anlagen in den Vereinigten Staaten, östlich des Mississippi. Basel. Karl Emil Hilgard. 1922. (Gift.)

DESCRIPTIVE SURVEY OF THE DETROIT WATER-WORKS.

By G. H. Fenkell. Detroit Board of Water Commrs. (Gift.)

DETROIT FILTRATION PLANT.

By Theodore A. Leisen. Detroit Board of Water Commrs. (Gift.)

COMMUNICATION TO THE BOARD OF ESTIMATE AND APPORTIONMENT.

Transmitting a Statement by William J. Wilgus, Consulting Engineer, in Rebuttal of the Arguments Favoring the Port Authority Plan and Showing the Superior Advantages of the Narrows Tunnel Project. N. Y., 1922. (Gift.)

SPECIAL REPORT RELATIVE TO THE CONDITION OF NORTH RIVER

In the Cities of Salem and Peabody and the Measures Necessary for Improving the Sewerage System of Said Cities. Mass. Dept. of Public Health. Bost., 1923. (Gift.)

NOTES ON THE GEOLOGY OF THE LINE OF THE PROPOSED MOFFAT TUNNEL.

Russell D. George. Boulder, Colo., 1922. (Gift.)

SEWERAGE AND SEWAGE DISPOSAL OF NEW YORK CITY.

New York City. Board of Estimate and Apportionment. (Gift.)

AVIATION POCKET-BOOK FOR 1919-20.

R. B. Matthews. Lond. (Purchase.)

RIGGING NOTES: AERO-BIPLANE TYPE 504 K

(100 H. P. Monosowpape.) Great Britain. Air Ministry. (Air Publication 916.) Lond. (Purchase.)

RIGGING NOTES F. S.: BOAT SEAPLANE.

Great Britain. Air Ministry. (Air Publication 905.) Lond., 1922. (Purchase.)

UNIVERSAL CAMERA MOUNTING.

Great Britain. Air Ministry. (Air Publication 913.) Lond. (Purchase.)

AUTOMOBILE TRADE DIRECTORY, APRIL, 1923.

Automotive Directories Corporation. N. Y. (Gift.)

BIBLIOGRAPHY OF AERONAUTICS, 1917-19.

U. S. National Advisory Committee for Aeronautics. By Paul Brockett. Wash., D. C., 1923. (Gift.)

GLIDING AND SOARING FLIGHT.

J. Bernard Weiss. Lond., 1923. (Purchase.)

MEASUREMENT OF IRRIGATION WATER.

U. S. Reclamation Service. Comp. by F. W. Hanna. Third Edition. Wash., 1923. (Purchase.)

DIE GLEICHSTROMMASCHINE.

Engelbert Arnold. New Edition. Berlin, 1919. (Purchase.)

RADIOTELEGRAPHIE ET RADIOTELEPHONIE A LA PORTEE DE TONS.

By G. Malgorn. Paris, Gauthier-Villars et Cie., 1923. 231 pp., illus., diagrams, 9 x 6 in., paper. 10 fr.

Most of the books on radio-telegraphy and telephony have been written for those experimenters, amateur or professional, who wish to construct or assemble radio stations. The writer addresses himself to that larger class of persons who purchase commercial radio sets ready for use, and who are interested only in understanding the principles of the apparatus and in learning how to use it most effectively. The book explains the theory of radio, the functions of the various parts of the receiving set, and supplies practical information on the operation and maintenance of the apparatus.

FURNACE HEATING.

By William G. Snow. Sixth Edition. N. Y., U. P. C. Book Co., 1923. 259 pp., illus., diagrams, 9 x 6 in., cloth. \$3.00.

This book gives an extended, detailed account of the hot-air furnace and its application to the heating of dwellings, school and public buildings, etc., together with general information on heating and ventilation. This edition has been revised and enlarged. Among the additions is a new chapter on "pipeless" furnaces.

SOME PRACTICAL ASPECTS OF FUEL ECONOMY.

Carl W. Mittman. (Smithsonian Misc. Coll., Vol. 76, No. 1) Wash., D. C., 1923. (Gift.)

BIOGRAPHY OF OTTMAR MERGENTHALER

And History of the Linotype, Its Invention, and Development. Balt., Md., 1898. (Gift.)

ELECTRONS, ELECTRIC WAVES AND WIRELESS TELEPHONY.

J. A. Fleming. Lond., 1923. (Purchase.)

RAW MATERIALS FOR THE MANUFACTURE OF SULPHURIC ACID

And the Manufacture of Sulphur Dioxide. Wilfrid Wyld. Lond., 1923. (Purchase.)

WOOD DISTILLATION.

By L. F. Hawley. (American Chemical Society. Monograph Series.) N. Y., Chemical Catalog Co., 1923. 141 pp., illus., tab., 9 x 6 in., cloth. \$3.00.

This welcome addition to the scanty literature on the distillation of wood is the first American book on the subject. It is intended to provide a concise, well digested survey of present knowledge, in a readable form, which will be of service to investigators in the field and also to those generally interested. The book is divided into two sections, dealing with the distillation of hardwood and resinous wood, respectively. Each section opens with a general description of commercial practice. This is followed by a discussion of the chemistry of the raw material, the process, and the products.

LES ECONOMIES DE COMBUSTIBLES; CONDUITE RATIONNELLE DES FOYERS.

By Pierre Appell. (Encyclopédie Léauté, 2^e Série.) Paris, Gauthier-Villars et Cie., 1923. 341 pp., illus., diagrams, tab., 8 x 6 in., paper. 17 fr.

The purpose of this book is to call attention to the economies in the use of fuel which are possible in industry and to indicate the methods by means of which these savings may be realized. The author reviews the fuel situation in France, gives directions for investigating and choosing fuels, explains the phenomena of combustion, and discusses methods for using fuel efficiently under boilers, in gas producers, and in furnaces. Methods of measurement and control are also considered. A bibliography and index are given.

PRACTICAL KILN DRYING.

E. U. Kettle. Grand Rapids, 1923. (Gift.)

CORROSION OF METALS AND ITS PREVENTION;

An Annotated Bibliography. Nathan Van Patten. Cambridge, Mass. (Purchase.)

CRYSTALLISATION OF METALS.

N. T. Belaiew. Lond., 1923. (Purchase.)

COPPER ORES.

Robert Allen. (Imperial Inst. Monographs on Mineral Resources.) Lond., 1923. (Purchase.)

BY-PRODUCT COKING.

By G. Stanley Cooper. Second Edition. Lond., Benn Brothers, 1923. 192 pp., illus., diagrams, 9 x 6 in., cloth. 12s. 6d.

This is an English treatise which aims to supply the need for a textbook by giving an accurate, up-to-date account of the industry as it stands at present. The author has considered the nature and preparation of coking coals, the development of the by-product oven, plant operation, oven systems, machinery, the recovery of by-products, and the utilization of gas. The book is intended primarily for students, but useful also to practical men.

MODERN IRON FOUNDRY.

By Joseph G. Horner. (Oxford Technical Publications.) Lond., Henry Frowde & Hoder & Stoughton, 1923. 255 pp., illus., 9 x 6 in., cloth. \$5.00. (Gift of Oxford University Press, American Branch.)

The work of an experienced founder, this book is intended for apprentices and young men who wish an insight into practical methods. Cupolas and their working, fans, blowers, and tools are described; methods of moulding are explained, and the causes of faults in casting are shown. There are chapters on fly-wheel, and cylinder moulding, on machine moulding, and die casting, as well as one on foundry design and equipment.

MERCURY ORES.

Edward Halse. (Imperial Inst. Monographs on Mineral Resources.) Lond., 1923. (Purchase.)

JAHRBUCH EISEN UND STAHL, 1921-22.

Essen. (Purchase.)

LES METHODES D'ETUDE DES ALLIAGES METALLIQUES.

Léon Guillet. Paris, 1923. (Purchase.)

DAS MODERNE SIEMENS-MARTIN-STAHLOWERK.

Hubert Hermanns. Halle a. S., 1922. (Purchase.)

ELECTRIC FURNACE FOR IRON AND STEEL.

By Alfred Stansfield. N. Y. & Lond., McGraw-Hill Book Co., 1923. 453 pp., illus., diagrams, tab., 9 x 6 in., cloth. \$5.00.

Instead of issuing a new edition of his "Electric Furnace", Dr. Stansfield has decided to replace it by two new books, of which the present work, dealing with the use of the electric furnace in the metallurgy of iron and steel, is one. It is intended to give a reasonably complete account of the electric smelting of iron ores to make pig-iron and the making of steel from metallic charges in electric furnaces. The book consists of three parts: The first contains historical matter, an outline of ferrous metallurgy, and a brief account of the electrical supply needed for electric furnaces. The second part describes the electric smelting of iron ores for pig-iron, the reduction of iron ores in the state of powder, and the production of ferro-alloys. The third part treats of the production of iron and steel from metallic materials and the furnaces in use for these purposes. It also includes a chapter on the production of steel from ore and ore electric welding.

COSTING AND PRICE FIXING.

By J. M. Scott-Maxwell. Lond. & N. Y., Isaac Pitman & Sons, 1923. 211 pp., illus., 9 x 6 in., cloth. \$2.00.

The purpose of this book is to give briefly the general principles of cost accounting and, in detail, a complete system applicable to a factory manufacturing a large variety of apparatus, relatively to its total output, the great bulk of which cannot be completed and put into stock, but can be only partly manufactured and must be completed after the receipt of the customer's order. Appropriate parts of the system will meet all the requirements of factories that produce finished products and sell from stock, while the complete system can also be applied to plants that work to order only. The principles and system have been used by the author in practice for the past fifteen years.

ESTIMATING THE COST OF BUILDINGS.

By Arthur W. Joslin. Third Edition. N. Y., U. P. C. Book Co., 1923. 212 pp., illus., 9 x 6 in., cloth. \$2.00.

In this volume on various matters of interest to contractors, the author explains how estimates are prepared for the different classes of work on a building, how sub-contracts are handled, and how building operations should be handled. One section is devoted to estimating alterations to buildings. The buildings referred to are wood or brick structures of moderate size. The directions are clear, full, and practical, making the book suitable for students in trade schools and beginners.

PLAN OF ST. PAUL.

Edward H. Bennett and W. E. Parsons. St. Paul, 1922. (Gift.)

TANK CONSTRUCTION RELATING PRINCIPALLY TO THE DESIGN,

Manufacture and Erection of Tanks in Mild Steel. E. G. Beck. (Mechanical World Series.) Manchester, 1921. (Purchase.)

ACOUSTICS OF BUILDINGS.

By F. R. Watson. N. Y., John Wiley & Sons; Lond., Chapman & Hall, 1923. 155 pp., illus., diagrams, 9 x 6 in., cloth. \$3.00.

This treatise by the Professor of Experimental Physics, University of Illinois, is intended to provide a general work on the acoustics of buildings which will present present knowledge of the subject in a form of practical use to architects and builders. The book describes briefly the action of sound in buildings and then gives detailed illustrations for guidance in the acoustic design of new buildings and in the correction of acoustic defects. Mathematical formulas and theory have been minimized, but the results of experiments are given in considerable detail. The book is divided into two main sections, "Acoustics of Auditoriums" and "Soundproofing in Buildings".

L'ECLAIRAGE.

By E. Darmois. Paris, Gauthier-Villars et Cie., 1923. 276 pp., illus., diagrams, 8 x 6 in., paper. 15 fr.

In this volume the author gives a good summary of the present state of the art of lighting. Theory and practice are both included, the intention being to assist architects and others in the intelligent selection and utilization of sources of artificial light. Particular attention is given to industrial lighting.

Current Civil Engineering Literature

Key to Abbreviated References to Publications Indexed*

| Abbreviated References. | Publication. | Place. |
|-----------------------------|--|--------------|
| Am. C. Inst..... | American Concrete Institute, <i>Proceedings</i> (Y.) | Detroit |
| A. I. E. E..... | American Institute of Electrical Engineers, <i>Journal</i> (M.) | New York |
| A. R. E. A..... | American Railway Engineering Association, <i>Proceedings</i> (Y.) | Chicago |
| A. S. T. M..... | American Society for Testing Materials, <i>Proceedings</i> (Y.) | Philadelphia |
| Am. Soc. C. E..... | American Society of Civil Engineers, <i>Proceedings</i> (M.) | New York |
| Am. Soc. Mun. Impvts..... | American Society for Municipal Improvements, <i>Proceedings</i> (Y.) | New York |
| Am. W. W. Assoc..... | American Waterworks Association, <i>Journal</i> (Bi-M.) | Baltimore |
| Am. Wood Pres. Assoc..... | American Wood Preservers Association, <i>Proceedings</i> (Y.) | Chicago |
| Ann. P. et C..... | Annales des Ponts et Chaussées (Bi-M.) | Paris |
| Ann. T. P. Belg..... | Annales des Travaux Publics de Belgique (Bi-M.) | Brussels |
| Assoc. Ing. Gand..... | Annales de l'Association des Ingénieurs sortis des Ecoles Spéciales de Gand (Q.) | Ghent |
| Bost. Soc. C. E..... | Boston Society of Civil Engineers, <i>Journal</i> (M.) | Boston |
| Can. Engr..... | Canadian Engineer (W.) | Toronto |
| Cem. Eng..... | Cement and Engineering News (M.) | Chicago |
| Cornell C. E..... | Cornell Civil Engineer (M.) | Ithaca |
| Dock & Harbour..... | Dock and Harbour Authority (M.) | London |
| Eng..... | Engineering (W.) | London |
| Eng. & Contr..... | Engineering and Contracting (W.) | Chicago |
| Eng. Inst. Can..... | Engineering Institute of Canada, <i>Journal</i> (M.) | Montreal |
| Eng. N. R..... | Engineering News-Record (W.) | New York |
| Engrs. Soc. Pa..... | Engineers' Society of Pennsylvania, <i>Journal</i> (M.) | Harrisburg |
| Engrs. Soc. W. Pa..... | Engineers' Society of Western Pennsylvania, <i>Journal</i> (M.) | Pittsburgh |
| Engr..... | Engineer (W.) | London |
| Engrs. & Eng..... | Engineers and Engineering, Engineers' Club of Philadelphia (M.) | Philadelphia |
| Gen. Civ..... | Le Génie Civil (W.) | Paris |
| Gesund. Ing..... | Gesundheits Ingenieur (W.) | Munich |
| Inst. C. E..... | Institution of Civil Engineers Minutes of Proceedings (Q.) | London |
| Inst. Mun. & Co. Engrs..... | Institution of Municipal and County Engineers, <i>Journal</i> (W.) | London |
| Int. Ry. Cong. Assoc..... | International Railway Congress Association, <i>Bulletin</i> (M.) | Brussels |
| Land. Arch..... | Landscape Architecture (M.) | Harrisburg |
| Mech. Eng..... | Mechanical Engineering (M.) <i>Journal of the American Society of Mechanical Engineers</i> | New York |
| Mil. Engr..... | Military Engineer (M.) | Washington |
| Min. & Metal..... | Mining and Metallurgy (M.) <i>American Institute of Mining Engineers</i> | New York |
| Mun. & Co. Eng..... | Municipal and County Engineering (M.) | Indianapolis |
| N. E. W. W. Assoc..... | New England Water Works Association, <i>Journal</i> (M.) | Boston |
| N. Y. R. R. Club..... | New York Railroad Club, <i>Proceedings</i> (M.) | Brooklyn |
| Oest. Ing. Arch. Ver..... | Oesterreichischer Ingenieur und Architekten Verein, <i>Zeitschrift</i> (W.) | Vienna |
| Power..... | Power (W.) | New York |
| Rev. Gen..... | Revue Generale des Chemins de Fer (M.) | Paris |
| Ry. Age..... | Railway Age (W.) | New York |
| Ry. Eng. & Main..... | Railway Maintenance Engineer (M.) | Chicago |
| Ry. Rev..... | Railway Review (W.) | Chicago |
| Schw. Bauz..... | Schweizerische Bauzeitung (W.) | Zurich |
| Sci. Am..... | Scientific American (M.) | New York |
| Soc. Ing. Civ. Fr..... | Société des Ingénieurs Civils de France, <i>Mémoires et Comptes Rendus</i> (Q.) | Paris |
| Ver. deu. Ing..... | Verein deutscher Ingenieure, <i>Zeitschrift</i> (W.) | Berlin |
| West. Ry. Club..... | Western Railway Club, <i>Proceedings</i> (M.) | Chicago |
| West. Soc. Engrs..... | Western Society of Engineers, <i>Journal</i> (M.) | Chicago |
| Zeit. Bau..... | Zeitschrift für Bauwesen (Q.) | Berlin |
| Z. d. Bauver..... | Zentralblatt der Bauverwaltung (Semi-Weekly) | Berlin |

* Y = Yearly; Q = Quarterly; M = Monthly; F = Fortnightly; W = Weekly.

A. Applied Sciences

a. Processes of Calculation

3. Stresses and Strains

Why Some Structures Fail. R. Fleming. Can. Engr. July 10, '23.
Haunched Steel I-Beam Tests Analyzed.* Can. Engr. July 10, '23.

B. Applied Mechanics

a. Mechanics of Solids

1. Processes of Measurement

La Pratique des Essais Mécaniques des Métaux.* (The Mechanical Testing of Metals.)
Jean Durand. Gen. Civ. June 2, '23.

2. Elastic Solids

Berechnung exzentrisch gedrückter Stäbe mit gleichformiger Querbelaugung.* (Calculation of Eccentrically Loaded Bars with Uniform Transverse Loading.) Franz Faltus. Oest. Ing. Arch. Ver. June 1, '23.

3. Jointed Systems

Beitrag zur Berechnung räumlicher Fachwerkträger.* (Contribution to the Calculation of Open-Panel Girders.) L. Geusen. Zeit. Bau. Pt. 1, '23.

7. Pulverulent Masses (Earth Pressure)

Ueber den Sanddruck.* (On Sand Pressure.) Ph. Forchheimer. Schw. Bauz. June 16, '23.

b. Hydraulics

2. Physical Hydraulics (Orifices, Pipes, Channels, Waves)

Stauröhren zur Messung des Druckes und der Geschwindigkeit im fließenden Wasser.* (Pitot Tubes for Measuring the Pressure and Velocity of Running Water.) R. Winkel. Ver. deu. Ing. June 9, '23.

3. Industrial Hydraulics

Hydroelectric Developments in Ontario.* F. G. Gaby. Mech. Eng. July, '23.

c. Pneumatics

2. Physical Pneumatics

Einflüsse der Meereshöhe und der Witterung auf die Zugstärke eines Kamins.* (Influence of the Sea Level and the Weather on the Draft of a Chimney.) E. Höhn. Schw. Bauz. June 23, '23.

C. Materials of Construction and General Processes

a. Lime, Cement, Mortar, Concrete, Brick, Bitumen, Timber, Gravel, etc.

Etude Experimentale sur le Beton au Ciment Fondu.* (Experimental Study of Fused Cement Reinforced Concrete.) G. Magnel. Assoc. Ing. Gand. Pt. 2, '23.
Beton-Schüttbauweise und Lamellendach.* (Structural Methods in Poured Concrete and Laminated Roofing.) Zollinger. Z. d. Bauver. June 20, '23.

b. Metals

Das Gussisen in der Baukunst.* (Cast-Iron in Architecture.) Hermann Schmitz. Z. d. Bauver. May 23, '23.

c. Preservation and Use of Materials. Painting, Waterproofing

Report of Committee No. 5-5-2—Non-Pressure Treatment of Poles.* Am. Wood Prs. Assoc., '22.
Wood Pipe and the Creosoting Process. H. D. Coale. Am. Wood Prs. Assoc., '22.
Report of Committee No. 5-6—Specifications for Creosote Treatment of Douglas Fir Wood Pipe Staves. Am. Wood Prs. Assoc., '22.
Report of Committee No. 6-6—Pressure Machinery.* Am. Wood Prs. Assoc., '22.
Report of Committee No. 4—Preservatives.* Am. Wood Prs. Assoc., '22.
Theory on the Mechanism of Protection of Wood by Preservatives.* Ernest Bateman. Am. Wood Prs. Assoc., '22.
Photography in Wood Preservation.* C. Henri Strawn. Am. Wood Prs. Assoc., '22.
Lumber Drying by Vacuum. Oscar E. Jacobs. Am. Wood Prs. Assoc., '22.
Why Preserve Mine Timbers. Geo. M. Hunt. Am. Wood Prs. Assoc., '22.
Decay of Mine Timber.* C. J. Humphrey. Am. Wood Prs. Assoc., '22.

e. Earthwork. Cubage. Excavating Machinery

Earth Dam Built by Flooding Dry Fill.* Albert S. Fry. Eng. N. R. July 23, '23.
Method of Computing Overhaul.* (From *The Constructor*.) Eng. & Contr. June 20, '23.

f. Rock Excavation, Mining, Rock Removal

Present Practice in the Design and Sinking of Mine Shafts.* R. G. Johnson. Engrs. Soc. W. Pa. May, '23.
Abstracts of Institute Papers. (Presented at Canadian Meeting.) Min. & Metal. July, '23.
Die maschinelle Gewinnung und Förderung im Stein-Kohlenbergbau unter Tage.* (Machine Mining and Conveying in Coal Mining Underground.) Fr. Herbst. Ver. deu. Ing. Serial beginning June 9, '23.

g. Execution of Works. Specifications

1. of Masonry

Report of Committee VIII—On Masonry. A. R. E. A., '22.

2. of Concrete

Record of Early Guniting Job.* Can. Engr. July 10, '23.

3. of Wood

Der Nachweise der Knickspannung bei Holz.* (The Identification of the Breaking Stress in Wood.) Rudolf Kern. Oest. Ing. Arch. Ver. June 15, '23.

4. of Metal

Cheaper Steel Construction is Objective of A. I. S. C.* Can. Engr. June 26, '23.

5. of Reinforced Concrete

Instructions de l'Association Belge de Standardisation Relatives aux Ouvrages en Beton Arme. Instructions of the Belgian Standards Association Relating to Reinforced Concrete Structures.) Assoc. Ing. Gand. Pt. 2, '23.

h. Foundations. Bridge Piers and Abutments

Underpinning the Washington Monument.* Sci. Am. July, '23.

Underpinning a Church Foundation with Slab Footings. Lazarus White Eng. N. R. July 12, '23.

j. Piles and Pile-Driving

Report of the San Francisco Bay Marine Piling Committee.* Am. Wood Prs. Assoc., '22.

The Destructive Attacks of Marine Borers.* William G. Atwood. Mil. Engr. May-June, '23.

Berths for Shipping in Tidal Waters. Ernest Latham. Dock & Harbour July, '23.

l. Construction Machinery and Tools—Drainage

Report of Committee No. 6-7—Material Handling.* (Cranes.) Am. Wood Prs. Assoc., '22.

D. Highways

c. Construction

Report of Sub-Committee 7-3-1 and 7-3-2—Flooring and Paving. Am. Wood Prs. Assoc., '22. Concrete Single Track Roads. Allan Mair Jackson. (Paper read before Can. Good Roads Assoc.) Can. Engr. June 26, '23.

Design and Construction of Concrete Roads.* Can. Engr. June 26, '23.

Grades for Asphalt Pavements. M. L. Patzig. (Paper read before Iowa Eng. Soc.) Can. Engr. June 26, '23.

Pavements with Thickened Edges.* (From *Concrete Highway Magazine*.) Cem. Eng. July, '23.

Uses of Asphalt in Highway Construction.* I. W. Patterson. (Paper read before C. G. R. A.) Can. Engr. July 3, '23.

Progress and Plant Co-Ordination, Concrete Road Work.* Austin E. Page. Eng. N. R. July 19, '23.

d. Maintenance

Maximum Age for Resurfacing Concrete Roads.* DeL. French. Eng. Inst. Can. July, '23.

h. Vehicles, Automobiles, Traffic

Reducing Railroad-Highway Crossing Accidents. H. A. Rowe. (Paper read before National Highway Traffic Assoc.) Mun. & Co. Eng. June, '23.

Mechanical Devices for Highway Traffic Regulation. (From Progress Report of Comm. of National Highway Traffic Assoc.) Mun. & Co. Eng. June, '23.

St. Louis Plans Wider Streets to Relieve Traffic Congestion. Eng. N. R. June 28, '23.

Road Surfaces and Motor Transport. Eng. N. R. June 28, '23.

Solving the Street Traffic Problem.* Sci. Am. July, '23.

L'Influence de la Vitesse des Véhicules sur la Facilité de Traversée d'une Chaussée Frequentée par les Piétons. (The Influence of the Speed of the Vehicles on the Ease of Crossing a Road Frequentated by Pedestrians.)* G. Morin. Gen. Civ. June 2, '23.

Die Vereinheitlichung des Berliner Verkehrswesens.* (The Unification of the Berlin Traffic.) Leonhard Adler. Oest. Ing. Arch. Ver. June 15, '23.

x. Miscellaneous

How Individual Organizations Can Fit Their Work Into a Broad Highway Research Program.

W. K. Hatt. (Paper read before Am. Road Builders' Assoc.) Mun. & Co. Eng. June, '23.

Le IVe Congrès International de la Route (Seville, 7-12 mai 1923). (The Fourth International Road Congress—Seville, May 7-12, 1923.) Ch. Dantin. Gen. Civ. June 2, '23.

E. Bridges, Viaducts, and Arches

a. Timber Bridges and Viaducts

Report of Committee VII—Wooden Bridges and Trestles.* A. R. E. A., '22.

Experience with Treated Wood on the Santa Fe. (Bridges and Ties.) A. F. Robinson. Am. Wood Prs. Assoc., '22.

b. Iron or Steel Bridges and Viaducts

Report of Committee XV—Iron and Steel Structures. A. R. E. A., '22.

The South Park Boulevard Viaduct.* T. L. Condron. West. Soc. Engrs. July, '23.

d. Concrete and Reinforced Concrete Bridges and Viaducts

Concrete Memorial Bridge Has Attractive Appearance.* Eng. N. R. July 19, '23.

F. Inland Waters**c. Regulation of Waterways—Volume of Discharge, Freshets, Floods, Soundings**

The Problems Arising in Flood Control.* Harry Taylor. (Paper read before Am. Assoc. for the Advancement of Science.) Mil. Engr. May-June, '23.
Food Protection Plan Adopted by Pueblo District.* C. A. Bock. Eng. N. R. July 12, '23.
Das Mündungsgebiete der Weichsel und seine Entwicklung.* (The Weichsel Delta and Its Development.) Weissker. Zeit. Bau. Pt. 1, '23.

d. Diverting Dams

Building the World's Largest Monolith.* Littell McClung. Sci. Am. July, '23.
Les Inondations de l'Yser en Octobre 1914.* (The Yser Floods in October, 1914.) L. Bourgoignie. Ann. T. P. Belg. Apr., '23.

g. Consolidation of Banks, Leakage, Maintenance of Channel, Dredging

Revetment of Reinforced Concrete Mats.* A. M. Todd. Mil. Engr. May-June, '23.
Ferro-Concrete Covering of the River Roch.* S. H. Morgan. Inst. Mun. & Co. Engrs. July 3, '23.

G. Maritime Works**c. Vessels and Maritime Navigation. Lighthouses and Buoys. Various Signals**

Elevation and Range of British Naval Guns.* Hector C. Bywater. Sci. Am. July, '23.

e. Navigation Locks

Essais de Résistance et d'Elasticité du Terrain de Fondation de la Nouvelle Ecluse Maritime d'Ymuiden. (Hollande).* (Tests of the Resistance and Elasticity of the New Maritime Lock at Ymuiden, Holland.) A. Bijls. Gen. Civ. May 26, '23.

l. Harbors (General Articles)

The Port of Bombay.* B. C. Rowlandson. Dock & Harbour. July, '23.
Seekanal und Seehafen von Brüssel.* (Brussels Sea Canals and Harbors.) P. Gerhardt. Z. d. Bauver. May 30, '23.
Dock Pumping Machinery.* M. Du-Plat-Taylor. Dock & Harbour Serial beginning July, '23.
Floating Caissons for Dry Docks.* H. F. Cornick. Dock & Harbour July, '23.

H. Railroads. Street and Interurban Railways. Automobiles. Aeronautics**a. Railroads****1. General articles**

Ontario Provincial Railway Extending to Hudson Bay.* Eng. N. R. June 28, '23.
Observations sur l'Organisation Matérielle des Chemins de Fer Allemands.* (Observations on the Physical Arrangements of the German Railways.) G. Mesnard. Gen. Civ. May 26, '23.

2. Location

Report of Committee XVI—Economics of Railway Location.* A. R. E. A., '22.

3. Roadbed. Construction Work. Tunnels

Report of Committee I—On Roadway. A. R. E. A., '22.
Report of Committee II—On Ballast.* A. R. E. A., '22.
Rapid Progress Being Made on Castleton Cut-Off.* Ry. Age June 30, '23.
Castleton Cut-Off of the New York Central R. R.* Ry. Rev. July 14, '23.

4. Track

Report of Committee III—On Ties.* A. R. E. A., '22.
Report of Committee V—On Track.* A. R. E. A., '22.
Report of Committee IV—On Rail.* A. R. E. A., '22.
Report of Committee XVII—On Wood Preservation.* A. R. E. A., '22.
Report of Committee No. 7-1—Service Test Records.* (R. R.) Am. Wood Prs. Assoc., '22.
Factors Affecting the Cost of Treated Cross Ties. E. E. Pershall. Am. Wood Prs. Assoc., '22.
The Economics of Cross Tie Renewals.* V. K. Hendricks. Am. Wood Prs. Assoc., '22.
The Feasibility of Introducing Tropical Ties in the United States. Nelson Cortland Brown. Am. Wood Prs. Assoc., '22.
Report of Committee No. 6-1—Peeling Ties. Am. Wood Prs. Assoc., '22.
Report of Committee No. 6-2—Adzing, Boring and Incising Layouts.* Am. Wood Prs. Assoc., '22.
Should the Cost of Treating Ties be Charged to Maintenance or Capital Account. Earl Stimson. Am. Wood Prs. Assoc., '22.
Experience with Treated Wood on the Santa Fe. (Bridges and Ties.) Am. Wood Prs. Assoc., '22.

Der viergleisige Ausbau der Eisenbahnstrecke Minden-Hamm.* (The Four-Track Extension of the Minden-Hamm Railroad Line.) Max Roloff. Zeit. Bau. Pt. 1, '23.

5. Signals and Safety Apparatus

Report of Committee IX—On Signs, Fences and Crossings.* A. R. E. A., '22.
Report of Committee X—Signals and Interlocking. A. R. E. A., '22.
Le Dispatching en Voie Unique sur le Réseau d'Orléans.* (Single Track Dispatching on the Orleans Lines.) Piarrat. Rev. Gen. June, '23.

6. Rolling Stock (Locomotives, Cars)

The Preservative Treatment of Car Sills and Decking. Forest S. Shinn. Am. Wood Prs. Assoc., '22.

Report of Committee No. 5-2—Car Lumber.* Am. Wood Prs. Assoc., '22.

Report of Committee on Car Construction. (Am. Ry. Assoc.) Ry. Age June 23, '23.

Report of the Committee on Wheels. (Am. Ry. Assoc.) Ry. Age June 23, '23.

Report of the Committee on Loading Rules.* (Am. Ry. Assoc.) Ry. Age June 23, '23.

Unit System of Repairing Freight Cars.* Ry. Age July 14, '23.

7. Use of Electricity

Report of Committee XVIII—On Electricity. A. R. E. A., '22.

Report of the American Committee on Electrolysis.* A. R. E. A., '22.

Nouvelle Locomotive Electrique de 180 Tonnes à Courant Continu ou Alternatif, du New-York, New-Haven and Hartford Railway.* (New 180-Ton Direct or Alternating Current Electric Locomotive of the New York, New Haven and Hartford Railway.) Gen. Civ. June 16, '23.

Einphasen-Lokomotiven mit Einzelachsantrieb, Type 1-C-1 der Ateliers de Secheron, Genf, für die S. B. B.* (Single-Phase Locomotives with Single-Axle Drive, Type 1-C-1 of the Secheron Works, Geneva, for the Swiss Government Railways.) J. Werz. Schw. Bauz. June 2, '23.

8. Stations, Engine Houses, Shops, Terminals

Report of Committee XIII—Water Service.* A. R. E. A., '22.

Report of Committee XIV—On Yards and Terminals.* A. R. E. A., '22.

Report of Committee XXIII—On Shops and Locomotive Terminals.* A. R. E. A., '22.

Report of Committee VI—On Buildings. A. R. E. A., '22.

Report of Shops and Terminals. (Am. Ry. Assoc.) Ry. Age June 23, '23.

New Burlington Locomotive Shop at Denver. A. H. Ostberg. Ry. Age June 23, '23.

The Outline of Steam Locomotive History.* Samuel M. Vauclain. (Paper read before Am. Ry. Assoc.) Ry. Rev. June 23, '23.

Securing Economy in the Heating of Stations and Buildings.* R. W. Noland. (Abstract of paper read before Int. Ry. Fuel Assoc.) Ry. Eng. & Main. July, '23.

New Features Incorporated in Water Softening Plants.* C. R. Knowles. Ry. Eng. & Main. July, '23.

Modern Locomotive Repair Shop at Waco, Texas.* Ry. Rev. July 7, '23.

Passenger Terminal Improvements at Portland, Ore.* Eng. N. R. July 19, '23.

Considérations Economiques et Pratiques sur les Aménagements des Stations.* (Economic and Practical Considerations in Station Management.) Robert van der Mensbrugghe. Assoc. Ing. Gand. Pt. 2, '23.

Bahnsteigtunnel und Bahnsteigtreppe.* (Railway Platform Tunnels and Platform Stairs.) Renfert. Z. d. Bauver. June 13, '23.

x. Miscellaneous

Traffic Studies Show Need of Balanced Budgets.* B. H. Mann. (From paper read before Am. Assoc. of R. R. Superintendents.) Ry. Age June 30, '23.

b. Special Railroads**x. Miscellaneous**

Die Schlepfbahn Ternitz-Wimpassing.* (The Ternitz-Wimpassing Factory Railroad.) Sigmund Schuschny. Oest. Ing. Arch. Ver. June 1, '23.

d. Street Railways, Elevated Railways, Subways**1. General Articles**

Chicago City Council Plans Unified Transit System.* Eng. N. R. July 19, '23.

f. Aeronautics**1. General Articles**

Die VIII Pariser Luftfahrzeug-Ausstellung.* (The Eighth Paris Aircraft Exhibition.) H. Schmid. Schw. Bauz. June 30, '23.

3. Aeroplanes

Le Levier de Commande des Avions, dit "Manche à Balal" et les Brevets Esnault-Pelterie.* (The So-Called "Broomstick" Airplane Control Lever and the Esnault-Pelterie Patents.) André Lainé. Gen. Civ. June 23, '23.

x. Miscellaneous

Operating Trains Against Current Reduces Delays.* K. E. Kellenberger. Ry. Age July 7, '23.

I. Municipal Water-Works. Agricultural Engineering**a. General Articles**

The Water Supply of Pretoria.* J. P. Pike. Inst. Mun. & Co. Engrs. June 19, '23.

The Water Supply of Skegness. Percy Griffith. Inst. Mun. & Co. Engrs. July 3, '23.

b. Hydrology—Water Resources

Reforestation of Water-Sheds.* Philip W. Ayres. N. E. W. W. Assoc. June, '23.

c. Dams and Reservoirs

The Storage and Distribution of Water.* E. Bruce Ball. (Paper read before Inst. Mech. Engrs.) Serial beginning July 6, '23.

Barrages Triangulaires en Maçonnerie.* (Triangular Masonry Dams.) G. Pigeaud. Gen. Civ. June 23, '23.

Die Erhöhung der Talsperre der Stadt Nordhausen. (Harz).* (The Heightening of the Dam at the City of Nordhausen, Harz.) E. Mattern. Ver. deu. Ing. June 23, '23.

d. Analysis and Purification of Water

Purification of Water for Domestic Purposes. W. Ingham. Inst. Mun. & Co. Engrs. June 19, '23.

Experiments in Water Coagulation with Aluminum Sulphate.* F. E. Daniels. Eng. N. R. July 19, '23.

Application of a Booster Pump to a Gravity System of Water Supply.* George F. Merrill. N. E. W. W. Assoc. June, '23.

e. Distribution of Water

Report of the Joint Committee on Standard Specifications for Water Meters. N. E. W. W. Assoc. June, '23.

Water Works Pumping Station, St. Thomas.* W. C. Miller. Can. Engr. July 3, '23.

Allocating Concrete, Cast Iron and Wood Stave in a Pipe Line.* Eng. N. R. July 12, '23.

Building a 9-Ft. Siphon on the Hetch-Hetchy Aqueduct.* N. A. Eckart. Eng. N. R. July 19, '23.

f. Drainage of Land

Draining Land with Gasoline.* S. R. Winters. Sci. Am. July, '23.

J. Sewerage. Sewage and Refuse Disposal

a. Sewers and Drains

Test of Segment Block Sewer.* Can. Engr. June 26, '23.

Twin Tunnels for Sewer Siphon Under Calumet River.* Eng. N. R. July 12, '23.

Building Intercepting Sewers and Siphon at Hammond, Ind.* J. B. Murphy. Eng. N. R. July 12, '23.

b. Sewage Disposal. Purification

Methods of Sewage Disposal. George A. Johnson. Can. Engr. June 26, '23.

Skegness Sewage Disposal Works. E. J. Silcock. Inst. Mun. & Co. Engrs. July 3, '23.

c. Refuse Disposal

Disposal of House Refuse. G. S. Burt-Andrews. Inst. Mun. & Co. Engrs. June 19, '23.

K. Heat Engines

c. Gas and Oil Engines

The Diesel Oil Engine for Water Works Service.* Charles E. Lucke and others. N. E. W. W. Assoc. June, '23.

Le Moteur à Huiles Lourdes Peugeot-Tartrais.* (The Peugeot-Tartrais Heavy Oil Engine.) G. Delanghe. Gen. Civ. June 9, '23.

L. Electricity

b. Distribution and Transmission of Electricity

1. Power Plants

Wabash River Station of the Indiana Electric Corporation.* Frank S. Clark. Power June 26, '23.

2. Long-Distance Transmission of Energy

Les Distributions Rurales d'Electricité en France. Législation. Etablissement des Projets. Subventions. (Rural Distribution of Electricity in France. Legislation. Organization of Projects. Subventions.) Paul Razous. Gen. Civ. June 9, '23.

Les Lignes Françaises de Transmission d'Energie Electrique à Hautes et Très Hautes Tensions.* (French Electric Transmission Lines of High and Very High Tension.) J. Tribot Laspiere. Gen. Civ. June 23, '23.

c. Electric Lighting

Street and Highway Lighting.* (Paper read before Nat'l Elec. Light Assoc.) Eng. & Contr. July 4, '23.

d. Mechanical Uses of Electricity

1. Electric Motors

Die Drehstrom-Induktionsmaschine als erweiterter Sonderfall der Gleichstrommaschine mit Fremderregung.* (The Multiphase-Current Induction Machine as an Extended Special Case of the Direct-Current Machine with Separate Excitation.) W. Kummer. Schw. Bauz. June 9, '23.

x. Miscellaneous

Die Anwendung der Elektrizität zu Heizzwecken.* (The Use of Electricity for Heating.) Edgar Zeulmann. Ver. deu. Ing. June 23, '23.

f. Signals and Communication

- The Electrical Plant of Transocean Radio Telegraphy.* E. F. W. Alexanderson and others. A. I. E. E. July, '23.
 Les Radiocommunications Internationales et la Station Radiotélégraphique de Sainte-Assise, près Paris. (International Radio Communication and the Sainte-Assise Radiotelegraph Station, near Paris.) G. Malgou. Gen. Civ. June 2, '23.
 Neue Selbstanschluss-Fernsprechanlagen der Rhätischen Bahn.* (The New Self-Connecting Telephone Plant of the Rhaetian Railroad.) Georg Forster. Z. d. Bauver. June 6, '23.

x. Miscellaneous

- Les Laboratoires de Recherches de la General Electric Company, Ltd., à Londres.* (The Research Laboratories of the General Electric Company, Ltd., London.) P. Calfas. Gen. Civ. May 28, '23.

M. Architecture**a. Educational, Government and Scientific Buildings**

- The Lincoln Memorial Reflecting Pool.* Charles A. Peters. Mil. Engr. May-June, '23.
 Die Deutsche Gewerbeschau in München.* (The German Industrial Exposition at Munich.) A. Gut. Zeit. Bau. Pt. 1, '23.
 Das Museum für Hamburgische Geschichte in Hamburg.* (The Museum for Hamburg History at Hamburg.) Ockert. Z. d. Bauver. May 30, '23.

b. Business and Commercial Buildings

- Extension to Eton Store Building, Toronto.* Can. Engr. June 26, '23.

c. Residences, Hotels

- Wohnhäuser von kunstgeschichtlichem Werte in Berlin und Vororten.* (Dwellings of Importance in the History of Art in Berlin and Its Suburbs.) Julius Kohte. Zeit. Bau. Pt. 1, '23.

f. Factories and Mill Buildings

- The Effect of Heat Upon Wood Destroying Fungi in Mills.* Walter H. Snell. Am. Wood Pra. Assoc., '22.

g. Other Buildings

- Die Siedlungsbauten im Bereich der Waldecker Talsperre.* (Community Buildings in the Neighborhood of the Waldeck Dam.) Meyer. Zeit. Bau. Pt. 1, '23.

i. Fire Protection

- Fire Prevention Methods. A. W. McQueen. Can. Engr. July 3, '23.

N. Landscape Engineering

- Slum Areas, Reconstruction and Rehousing. A. Horsburgh Campbell. Inst. Mun. & Co. Engrs. July 3, '23.
 City Planning and Zoning. George P. Herrold. (Paper read before Minnesota Federation of Architectural Soc.) Can. Engr. July 10, '23.
 Der Wiederaufbau von Ostpreussen.* (The Restoration of East Prussia.) Lange. Z. d. Bauver. June 6, '23.

O. Administration. Legislation. Economics. Statistics**d. Administrative and Financial Management of Means of Communication**

5. Railroads and Street Railroads
 Report of Committee XII—Rules and Organization. A. R. E. A., '22.
 Report of Committee XXII—On Economics of Railway Labor.* A. R. E. A., '22.
 Report of Committee XX—Uniform General Contract Forms. A. R. E. A., '22.
 Report of Committee XI—On Records and Accounts.* A. R. E. A., '22.
 Notes on Economics of Railway Engineering. F. S. Stevens. (Paper read before N. Y. R. R. Club.) Eng. & Contr. June 20, '23.

g. Engineering Education

- Beitrag zur Didaktik des technischen Unterrichts. (Contribution to the Didactics of Technical Instruction.) A. Imhof. Schw. Bauz. June 16, '23.

Q. Surveying and Geodesy

- Das photogrammetrische Vermessungsverfahren der Internationalen aerogeodätischen Gesellschaft.* (The Photogrammetric Surveying Process of the International Aerogeodetic Company.) Otto Laemann. Z. d. Bauver. June 6, '23.